Lapap Mk II Manual

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Lapap Mk II Manual

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Abstract

This document is the user manual for the Lapap Mk II Application.

Lapap Mk. II is the commanding and control crew interface for Columbus.

It provides online access to the nominal part of columbus' subsystems. Data is directly derived from the DMS data pool and commands are initiated directly to the onboard execution software by the crew.

Subsystems and equipment are shown within Lapap Mk. II as graphical schematics with data representation in alphanumerical output boxes, states, animated symbols and line color coding. Commands are predefined so that the crew can issue the commands by either clicking on a button or selecting the command from a list and clicking **Execute**.

Lapap Mk II provides commanding for all subsystems, display measurements acquired by the DMS and indicators of limit supervision and data validity.

Chapter 1

Installation Instructions

This chapter describes the steps necessary to install Lapap Mk II.

1.1 Check Platform Requirements

The Lapap Mk II software runs on Linux, Windows, and Solaris platforms for which a Java (TM) 2 Standard Edition runtime environment is available (see http://java.sun.com/j2se). It has been tested on the following platforms:

- SUSE Linux Enterprise Server 9 with Service Pack 3 and J2SE 1.6.0_01
- Windows XP (SP2), J2SE 1.6.0_01

Other platforms are expected to work but are currently not supported.

1.2 Instructions for Linux/Unix

1.2.1 Unpacking the Distribution

The distribution comes as an archive named *lapap-x.y.z.tar.gz* where *x.y.z* is the release version identifier (e.g., 1.4.0). To unpack this archive in a sub-directory of your home directory, do:

$ cd $HOME

$ tar zxf lapap-x.y.z.tar.gz

This will create a directory *$HOME/lapap-x.y.z* containing the complete Lapap Mk II distribution.

The Lapap Mk II software saves user specific information such as window position or workspace changes. They are saved into an application configuration directory which is by default named:

$HOME/.lapap

If you install the Lapap Mk II software onto a machine where a previous version had been installed you may want to delete this directory or its contents to ensure a clean new environment and skip all former configuration changes.

1.2.2 Starting the application.

You can start the Lapap Mk II application with the command:

$ $HOME/lapap-x.y.z/bin/lapap.sh

1.2.3 Exiting the application

Choose **Exit** from the **File** menu inside the application window.

1.3 Instructions for Windows XP

1.3.1 Unpacking the distribution.

The distribution comes as an archive named *lapap-x.y.z.zip where* x.y.z *is the release version identifier (e.g., 1.4.0).* To unpack this archive in a sub-directory of the program folder

- select the file *lapap-x.y.z.zip* in the windows explorer.

- in the context menu (right-click) choose **Extract All...** and extract the file to a directory of your choice, for example *C:\Program Files*.

This will create a directory *C:\Program Files\lapap-x.y.z* containing the complete Lapap Mk II distribution.

The Lapap Mk II software saves user specific information such as window position or workspace changes. They are saved into an application configuration directory which is by default named:

%USERPROFILE%/.lapap

If you install the Lapap Mk II software onto a machine where a previous version had been installed you may want to delete this directory or its contents to ensure a clean new environment and skip all former configuration changes.

1.3.2 Starting the application

You can start the Lapap Mk II application by double-clicking on the file: *C:\Program Files\lapap-x.y.z\bin\lapap.bat*.

1.3.3 Exiting the application

Choose **Exit** from the **File** menu inside the application window.

1.4 Operational Products in the Standalone Version

In the standalone version of Lapap Mk II examples of operational data are contained for demonstration purposes. Operational products are Synoptic Displays, ODF Procedures and Crew Documentation. These products are located in dedicated sub-folders of the LAPAP Mk II directory structure:

share/displays
share/odf
share/doc

Here they can be easily exchanged if new data is available by simply replacing the files in these directories. However, Lapap Mk II expects all data in a consistent set and the paths to these data need to be preserved.

Chapter 2

Working with Lapap Mk II

This chapter describes the general work flow in Lapap Mk II. It will introduce the menu bar and the tool bar. Also information on working with **Workspace**s and **Plugin**s can be found here.

2.1 Menu Structure

This section describes the different functions that can be found in the Menu of Lapap Mk II.

2.1.1 File

The File Menu contains functionality to save the data in the **Data pool buffer** and to exit the application.

2.1.1.1 Reset Application

Resets the application. This means that all read only workspaces are reloaded and changes performed to them are reverted.

In detail, the following actions are performed:

- Read only workspaces are reset to their initial layout.
- Documentation Viewer opens the default home page.
- Message Buffer View is set to its initial state.
- Preferences are set to their defaults. For detailed information about which settings are affected see Section 2.4.

2.1.1.2 Save Data pool Buffer...

The Data pool Buffer saves the values of the **Measurements** within the last 30 minutes and stores them automatically within a temporary binary file.

The menu item "Save Data pool Buffer..." is useful to export these data into `*.csv` format.

2.1.1.3 Exit

Choose this menu item to quit the Lapap MK II application. Before the application will be closed, a confirm dialog appears which has to be confirmed by clicking the **OK** button.

2.1.2 View

This menu contains functionality to manage the different views of the application.

2.1.2.1 Show Message Buffer ...

Choose this menu item to open the **Message Buffer View**. For detailed information about the **Message Buffer View** see Chapter 6.

2.1.2.2 Refresh Display Navigation Tree

Refreshes the Synoptics Hierarchy View.

2.1.2.3 Google / Table Style Search Results

These two menu items change the layout of the search results in the documentation workspace. **Google Style Search Results** will make the results look like the results in *www.google.com*, while **Table Style Search Results** displays the search results in a table.

2.1.2.4 Zoom in doc / Zoom out doc

This functionality changes the font size of the content in the documentation workspace. Images are not affected by the zoom level and will stay in their default size (100%).

2.1.2.5 Clear Log

Clears the Lapap Mk II applications log. This log displays messages which track the user actions performed in Lapap Mk II.

2.1.2.6 Windows

The **Windows** sub menu contains the menu item: **New Window...** and a list of all windows which have been created for the currently selected **Workspace**. The functionality of configuring **Workspace**s and new windows is described in Section 2.3.

2.1.2.7 Workspaces

Opens a sub menu to choose a different **Workspace**. **Workspaces** can be seen as different views of the content available in Lapap Mk II.

For detailed information see Section 2.3.

2.1.2.8 Add Plugin / Undock Plugin / Move Plugin / Remove Plugin

Lapap Mk II offers the possibility to load and integrate special **Plugin**s into the **Workspace**. It is also possible to undock the currently selected view, which will open it in an external window.

2.1.2.9 Split Frame

By using this menu item it is possible to split a frame into two new Frames. See Section 2.3 for detailed information on Workspace layout.

2.1.2.10 Maximize... / Reset View

Maximizes the content of the active frame in the working area. After using this feature, the menu item is renamed **Reset View** and will reset the view.

2.1.2.11 Show Log Window

Displays the applications user log. In this area near the bottom of the application window user actions will be logged.

2.1.3 Display

2.1.3.1 Close

Closes the currently selected Display.

2.1.3.2 Close Others

Closes all other Displays except the one currently selected.

2.1.3.3 Undock

Undocks the current Display. See Section 4.1.1 for more information.

2.1.3.4 Cascade / Tile / Maximize All...

These are default window operations for the open displays.

IMPORTANT

The Application has to be in Window Mode to make these functions work.

See Section 2.1.3.5.

2.1.3.5 Toggle Tabbed Mode

Toggles the display mode of Synoptic Displays. See Section 4.1.2 for more information

2.1.3.6 Synoptic Default Size

Resizes a Display back to its native size. See Section 4.1.3.2.

2.1.3.7 Load Homepage...

Opens the **Home Display**.

2.1.3.8 Subsystem Overview

Opens the Functional Overview Displays of all subsystems.

2.1.3.9 Close all but Homepage

Closes all open displays except the **Home Display**.

2.1.3.10 Find Text As You Type

This functionality is related to **Synoptic Displays**. It can be used to find a specific item within the display by searching for its name as it is shown in the display.

If a display is open, select **Find Text As You Type** and type the term you are searching for. The text you have entered so far is displayed in the lower section of the display area. All items within the display which match to the search term are highlighted with a yellow frame.

To stop the function press the **ESC** key.

2.1.3.11 Find Parameter In Other Displays

This function can be used to find other displays that contain a certain **Measurement**. See Find Parameter In Other Displays.

2.1.3.12 Properties

Opens a dialog which shows the properties of the selected Display.

2.1.4 Documentation

The functionality found here is related to the Documentation Workspace.

2.1.4.1 Find in page...

This will open a small dialog box to enter a search term. The currently loaded documentation page will then be searched for the entered term.

2.1.4.2 Zoom in doc / Zoom out doc

This will aply a larger / smaller font size to the content in the documentation frame. Images are not affected by the selected size. Alternatively this functionality can be accessed from the lapap tool bar.

2.1.5 Options

This menu contains only one entry: The **Preferences** Dialog.

2.1.5.1 Preferences

Opens the **Preferences**dialog of Lapap Mk II.
See Section 2.4.

2.1.6 Help

2.1.6.1 Hot Key Help

This will open a help screen which gives information about certain hot keys (key combinations) and about their functionality.

2.1.6.2 Current Display

This menu item opens the display specific help. Every display contains a link to a specific help page which will be displayed in the **Documentation Workspace**.

2.1.6.3 ODF Documentation

Opens the ODF Documentation in the **Documentation Workspace**.

2.1.6.4 User Manual

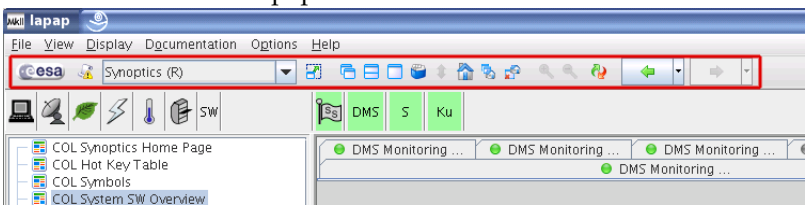
Displays this document in the **Documentation Workspace**.

2.1.6.5 About

Opens an **About** dialog. The exact version and build number of the Lapap Mk II application can be seen here.

2.2 Tool bar

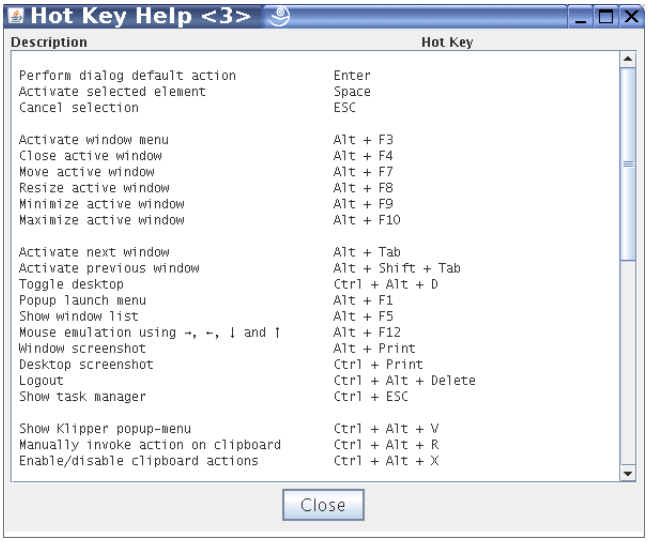
This chapter gives an introduction to the Lapap tool bar.



Tool bar of Lapap Mk II

- **Hot Key Help**

  esa This will open the Hot Key Help. "Hot Keys" are keyboard shortcuts which provide a fast way to reach certain functionality within the application.



Hotkey Help Dialog

- **Show Message Buffer**

   This will open the Message Buffer View. See Section 6.1.

- **Workspace Chooser**

  This element can be used to choose a predefined Workspace. See Section 2.3.

- **Maximize Frame**

   This will maximize the currently selected frame in the workspace. See Section 2.1.2.10.

- **Window Actions**

   These Actions are used to control certain functions of the Synoptic Display Windows. For more Information on how to handle windows in lapap see Section 4.1.

  The actions are (from left to right):

  - **Cascade**. Organizes the currently opened displays in a cascaded way.
  - **Tile**. Organizes the currently opened displays in a tiled way.
  - **Maximize** Maximizes the currently selected display within the Synoptic Display Area
  - **Toggle Tabbed Mode**. This toggles between the tabbed and the windowed mode. See Section 2.1.3.5.

- **Synoptic Actions**

   These Actions are used to invoke certain actions specific for Synoptic Displays. See Chapter 4.

  The actions are (from left to right):

  - **Default Synoptic Size**. Sets the currently selected display to its Synoptic Default Size. See Section 2.1.3.6.
  - **Load Homepage**. This opens the Home Display.
  - **Subsystem Overview**. This opens the Functional Subsystem Displays for all subsystems.
  - **Close all but Homepage**. All other displays than the Homepage will be closed.

- **Zoom Documentation**

   This will zoom in / out in the Section 9.3 **Workspace**. Zooming the documentation means that the font size of the documentation content will be increased / decreased. Images are not affected by the zoom level.

CAUTION

When changing the font size of the documentation the currently visible position of the document is not maintained.

- **Reset Application**

   Resets the application. This means that all read only workspaces are reloaded and changes performed to them are reverted.

- Back List / Forward List

   These controls are related to **Synoptic Procedures**. They allow the navigation through the history of procedures which have been opened in the **Procedure Executor**. Threre are two ways to use the controls:

  A simple click will move to the previous / next procedure in the history

  A click on the small arrow on the left of the control will open a popup menu displaying all procedures that lie before / behind the currently selected procedure. To open a procedure from this list, simply click it.

2.3 Workspaces

Workspaces can be considered as different display representations of the functionality and tools available in Lapap Mk II.

Workspace defines the frames presenting the crew interface to the Lapap Mk II tools. Frame locations are fixed whereas the occupancy is defined by different frame sets, i.e. **Workspace**s. The menu bar and the tool bars are not part of a **Workspace** and always present.

The predefined **Workspaces** which can be selected in the view Menu, but it is also possible to define own **Workspaces**.

2.3.1 Plugins

Workspaces display their content using **Plugin**s. A **Plugin** can be considered as a component that can be integrated dynamically into the application. In fact, everything (except the menu and the tool bars) within lapap is realised as **Plugin**s.

As these **Plugin**s are realized as self contained functional units, it is possible to customize the layout of the application.

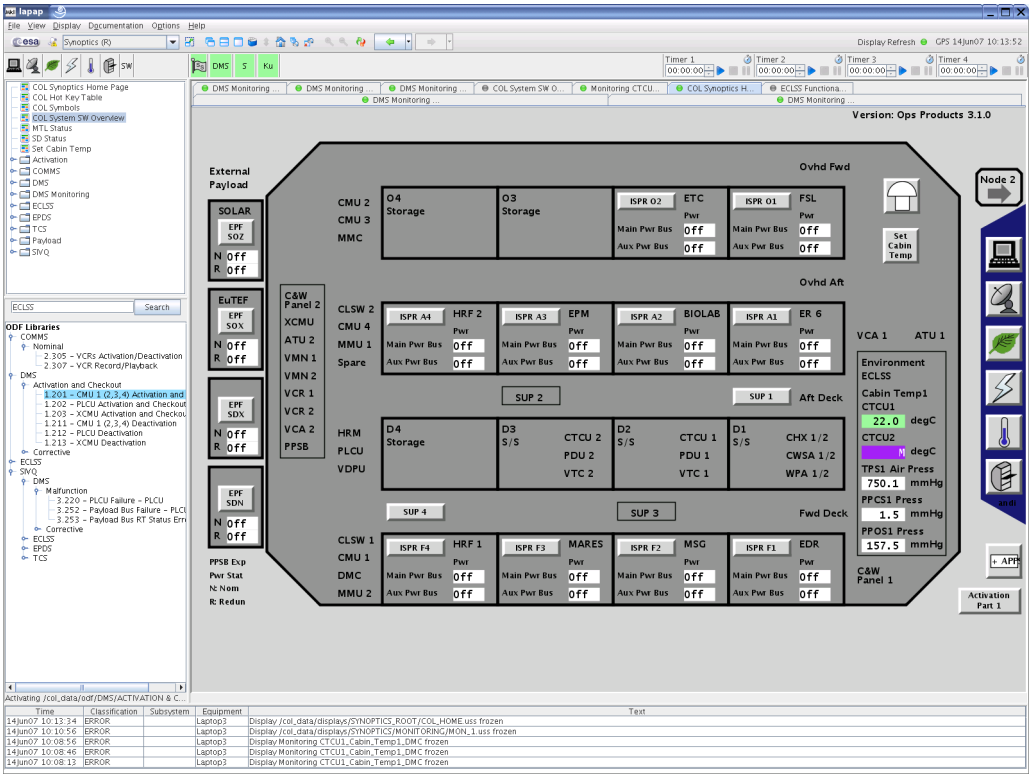
2.3.2 Predefined Workspaces

The following **Workspace**s are predefined and can be selected in the Menu **View \ Workspaces**. It is possible to select a **Workspace** from the **Workspace Chooser** in the Lapap tool bar. Each **Workspace** is designed for a special purpose.

One thing that all predefined **Workspace**s have in common, is that the System Message Panel is always present.

- **Synoptics**

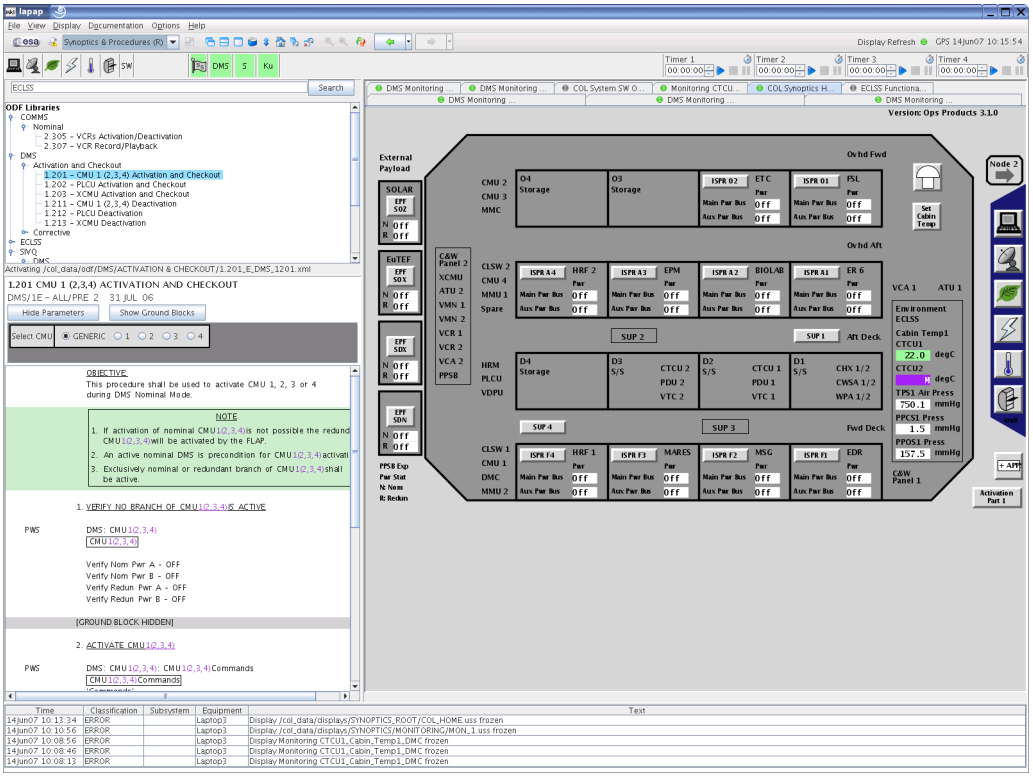
  This is the default **Workspace** loaded at start up. This **Workspace** should be used to work with the **Synoptic Displays** exclusively.



Synoptics Workspace

- **Synoptics & Proc.**

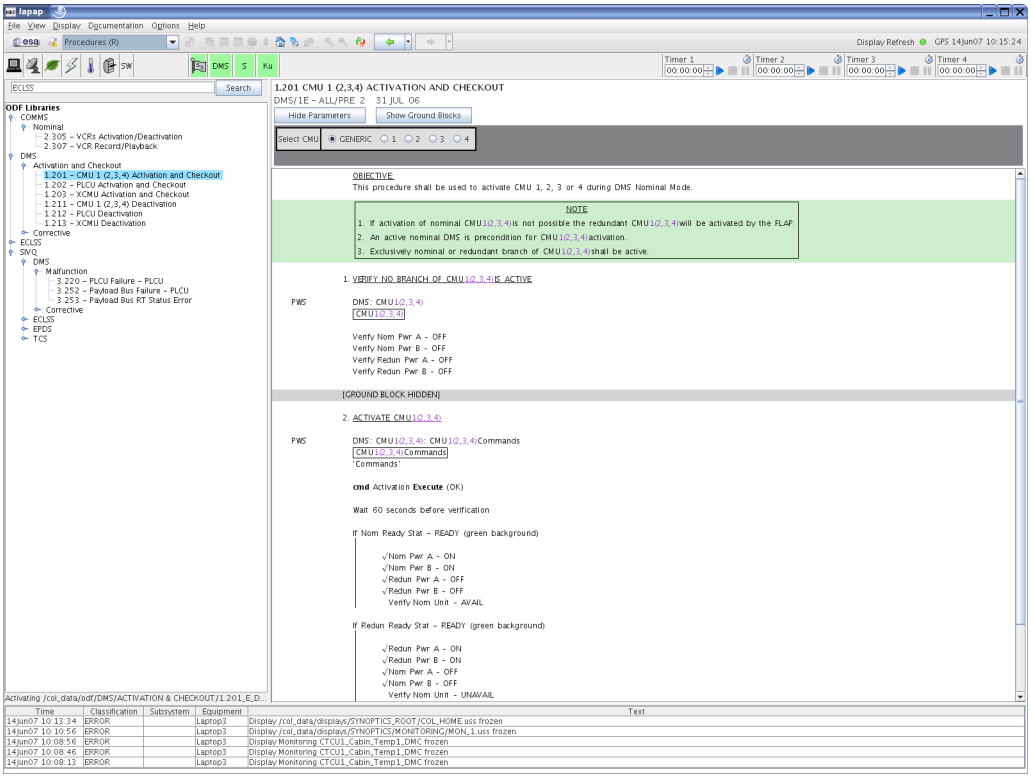
  This Workspace makes it possible to work with both Procedures and Synoptics at the same time.



Synoptics & Proc. Workspace

- **Procedures**

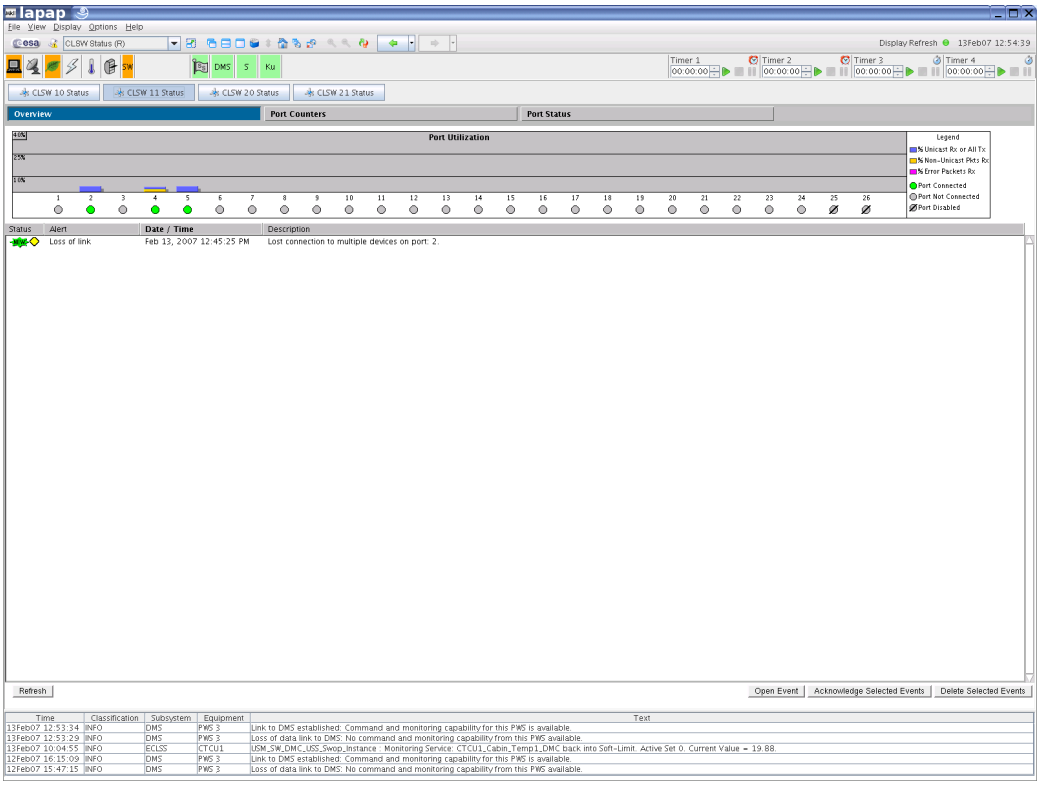
  This Workspace focuses on working with procedures.



Procedures Workspace

- **CLSW Status**

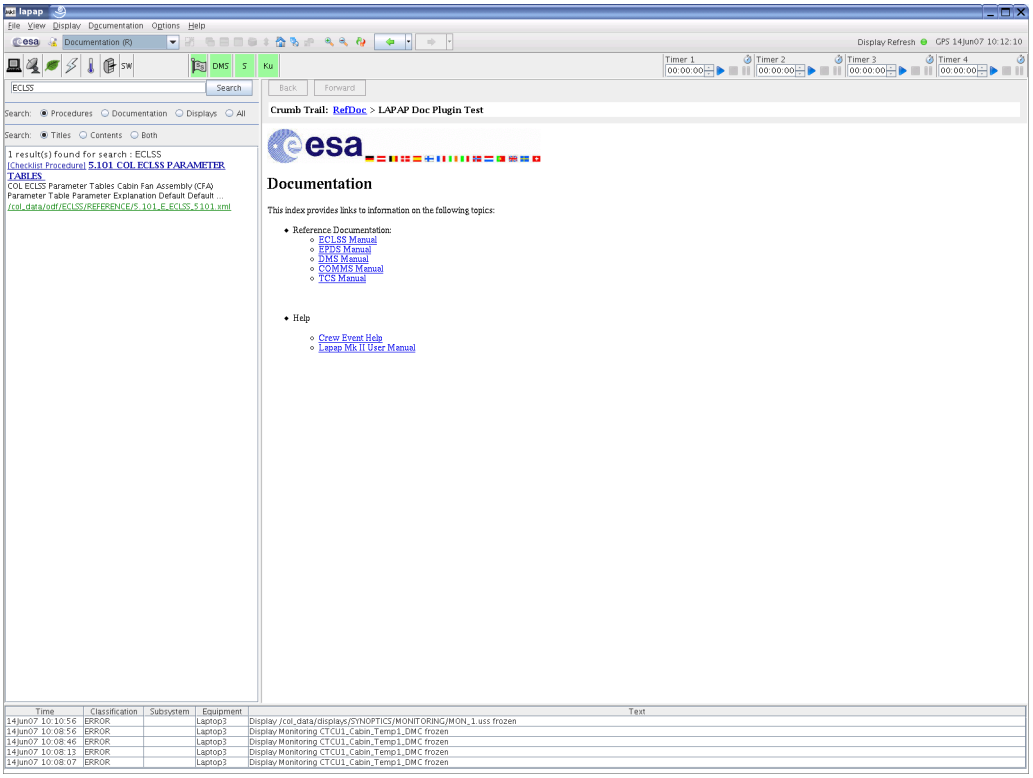
  This workspace can be used to access the web front ends of the four Columbus CLSW Switches. See Chapter 3 for more information.



CLSW Configuration Workspace

- **Documentation**

  The focus of this Workspace is to display the Documentation available in Lapap Mk II.



Documentation Workspace

2.3.3 Changing Workspaces

It is possible to change the layout of a **Workspace** (predefined or self created) and add or remove **Plugin**s. If the layout of a **Workspace** has been changed and the application is closed, this changes will be saved and restored at the next start of lapap.

Predifined **Workspace**s marked with an **(R)** are treated in a special way. The **(R)** stands for "read only". These read only **Workspace**s can be changed in layout and content just like every non read only **Workspace** but these changes aren't saved when the application is closed. Another difference is that the original layout of read only **Workspace**s will be restored if the **Reset Application** icon in the toolbar is pressed.

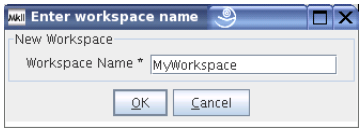
2.3.4 Creating Workspaces

To create an empty **Workspace**, choose **View \ Workspace \ Create Workspace...** from the menu. This will create a new **Workspace** and remove all **Plugins** from the application leaving an empty working area.

At first, the user is requested to enter a name for the new **Workspace** in the upcoming dialog box.

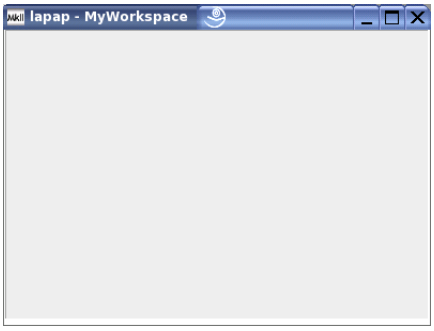
IMPORTANT

The menu item view \ Workspace \ Create Workspace will create a new Workspace in the application main window. For reasons of readability the following figures will show the process of configuring an own workspace in a new window. See Section 2.3.6.



Creating a new Workspace

After pressing the **OK** button, the new empty **Workspace** will be selected.



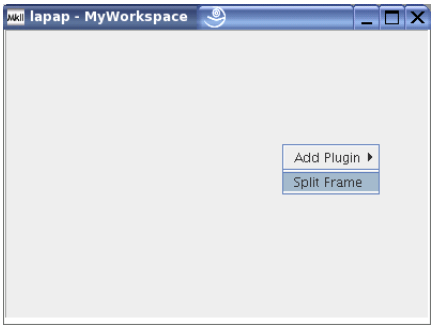
Empty Workspace

IMPORTANT

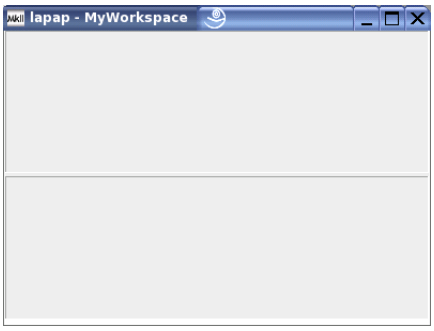
The steps described in the following can also be performed on the predefined Workspaces. But changes performed on Workspaces marked with an (R) won't be saved when the application is closed.

Now it is up to the user to design a new **Workspace**. It is possible to subdivide the working area into smaller panels which are divided by horizontal or vertical splitters.

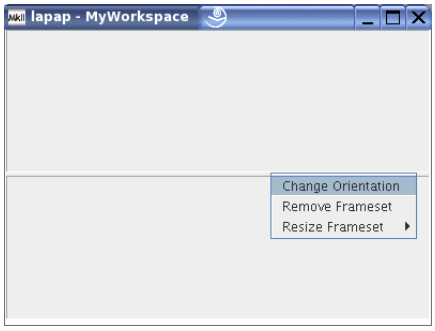
This can be done by right clicking anywhere into the empty frame and selecting **Split Frame** from the context menu. This will divide the frame in two by a horizontal splitter. The orientation of the sliders can be changed by context menu. To remove a frame set, choose **Remove Frameset** from the splitter's context menu. Of course, a frame of a frame set can be divided into two more frames



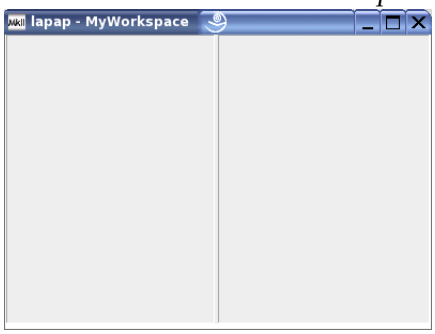
1: Context Menu in an Empty Frame



2: The Empty Frame is Split into a Frame Set



3: Context Menu of a Frame Set Splitter



4: Frame Set After Changing the Orientation

The context menu for a splitter contains these menu items:

- **Change Orientation**

  This will change the splitters orientation from vertical to horizontal and vice versa.

- **Remove Frameset**

  This removes the splitter and unites the two frames into one. The **Plugin**s which have been integrated into the two frames are now all integrated into one Frame.

- **Resize Frameset**

  This will open a sub menu with radio buttons to choose the way the frameset should behave if the application window is resized or the splitter is moved. Only one of the following settings can be selected:

  - **Proportional**

    The Frames will be resized proportional, if the application window is resized. The splitter can be moved manually.

  - **Proportional, Fixed**

    The Frames will be resized proportional, if the application window is resized., The splitter can't be moved manually.

  - **Left / Top**

    The left / top Frame will be resized proportional while the right / bottom Frame keeps its size. The splitter can be moved manually.

  - **Left / Top, Fixed**

    The left / top Frame will be resized proportional while the right / bottom Frame keeps its size. The splitter can't be moved manually.

  - **Right / Bottom**

    The right / bottom Frame will be resized proportional while the top / left Frame keeps its size. The splitter can be moved manually.

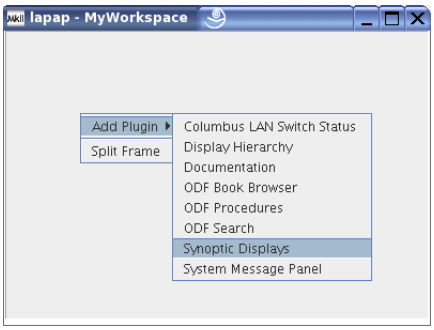
  - **Right / Bottom, Fixed**

    The right / bottom Frame will be resized proportional while the top / left Frame keeps its size. The splitter can't be moved manually.

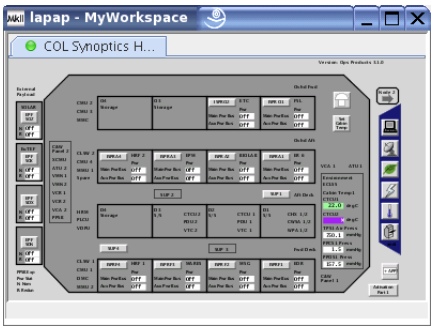
After the working area has been organized into frame sets, it is time to put **Plugin**s into them:

- Choose **Add Plugin** from the context menu. This will bring up a list of **Plugins** at the right side of the applications window.

- Just drag and drop the **Plugins** into their destination frame.



5: Add Plugin Opens the Plugins List



6: Integrated Plugin

The layout of the Workspace does not need to be saved. All changes are saved automatically to the Workspace.

IMPORTANT

Be careful: even changes to the predefined Workspaces are saved immediately and without comment. Only Workspaces marked with an (R) are "read only". Changes made to these Worspaces are not saved.

The functions in the context menu can also be accessed in the view menu:

- **Add Plugin**

  Opens a list with all **Plugins** available and not integrated into the application. **Plugins** can be integrated into a frame via drag and drop. It is possible to add more than one **Plugin** into a single frame.

  If more than one **Plugin** share a frame, a certain **Plugin** can be selected by clicking onto its tab.

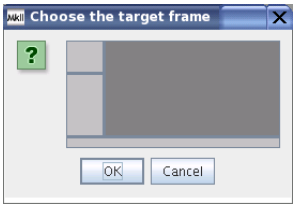
- **Undock Plugin**

  Undocks the Plugin. The Plugin opens in an external window. For detailed information on docking and undocking Plugins, see Section 4.1.1.

- **Move Plugin**

  Selecting this item in the menu will open up a small dialog showing graphical representations of the different Frame sets within the application. The selected **Plugin**'s frame is shown in dark gray.

  Select the destination of the selected **Plugin** by clicking into one of the light gray representations, and the **Plugin** will be moved to the according Frame



Dialog to Choose the Destination of a Plugin

- **Remove Plugin**

  This will remove the selected **Plugin**. After removing a **Plugin** from the application, it will appear in the list of available **Plugins**.

- **Split Frame**

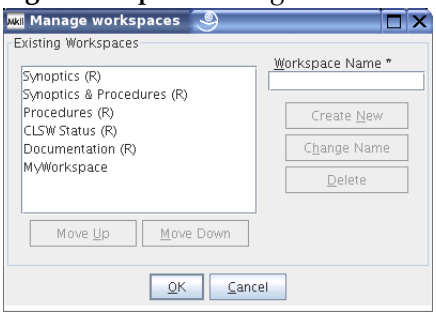
  Choosing this item will split the currently selected frame into two frames.

- **Maximize**

  Maximizes the currently selected Frame. After maximizing a frame, the menu item will be renamed to *Reset View...*

2.3.5 Managing Workspaces

To manage own or predefined **Workspaces**, choose **View** \ **Workspaces** \ **Manage Workspaces**... from the menu. This will open up the **Manage Workspaces** dialog.



The Manage Workspaces dialog

The following actions can be performed in this dialog:

- **Create New**

  This will create a new empty **Workspace** with the name entered in the input field and put it at the end of the list of **Existing Workspaces**.

- **Change Name**

  Click this button to change the name of an existing **Workspace**. This Button will only be enabled if a existing **Workspace** has been selected before.

- **Delete**

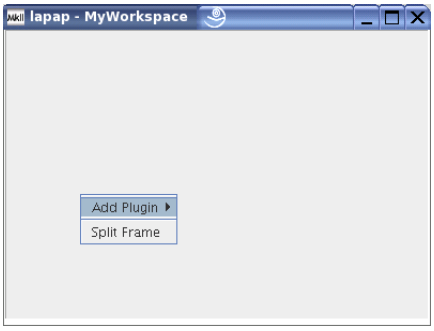
  To delete an existing **Workspace**, select it in the list and press the **Delete** button. If the deleted **Workspace** was the one currently selected, the first one in the list will automatically be selected.

- **Move Up / Down**

  This will move the selected **Workspace** up or down in the list of **Existing Workspaces**. The order in the list is the order in which the **Existing Workspaces** will appear in the **Workspaces** sub menu.

2.3.6 Creating Own Windows

It is possible to create own windows in which **Plugin**s can be integrated like in each other frame. To create a new Window, select **View** \ **Windows** \ **New Window...** from the menu. This will open a dialog which asks for a name for the new window. This name will be displayed in the window title.



Self Created Empty Window

After one or more Windows have been created, they are listed in the **View \ Windows** menu. The way how **Plugin**s can be integrated into them is similar to integrating **Plugin**s into frames of the main window.

Custom windows are directly connected to the **Workspace** in which they have been created. As a consequence they will be only visible if this **Workspace** is currently selected. Even the **View \ Window** menu only contains the windows for the current **Workspace**.

If the user closes a window, the application will display a confirmation dialog. After the user confirmed, the window will be closed and its layout will be lost.

The windows (unless they have been closed) will be available after the application has been restarted.

2.4 Preferences

To change preferences for the Lapap Mk II application choose **Options \ Preferences** from the menu. This will open the **Preferences** Dialog.

If the application is closed and reopened or Reset Application is chosen from the menu or the tool bar, some of the Preferences will be set to their default values:

- **Audio Notification**
  - All check boxes *selected*.
- **Search**
  - Search results layout = *Google Style*.
- **Datapool Buffer**
  - Auto-export datapool buffer *selected*.
  - Auto-export incremental *selected*.
- **Tool Tips**
  - Activate *selected*.

2.4.1 Audio Notification

This section provides the possibility to associate sound files with specific events in the Lapap Mk II application. Every time an event occurs, the configured sound file will be played.

2.4.2 Search

Here you can select the **Search Result Layout**. You can select between **Google Style** and **Table Style**.

2.4.3 Datapool Buffer

These options are related to the export functionality of the Datapool Buffer.

- **Auto-export datapool buffer**

  This will enable the automated export of the Datapool buffer.

- **Auto-export incremental**

  This option controls the amount of data which is exported on each auto export. if Auto-export incremental is selected, only the updates which arrived since the last export will be saved. If it is not selected, each export will contain the updates of the last 30 minutes.

2.4.4 Tool Tips

Select or delesect **Activate** if you want to turn on or off the tool tips in Lapap MK II.

Chapter 3

CLSW Status

This Chapter introduces the **CLSW Status Workspace**. This **Workspace** can be used to access the web front ends of the four Columbus CLSW Switches. It provides access to the initial page of the switches. Access to further pages is controlled by ground configuration.

To open one of the four pages, click on the according **CLSW Status** button. The web front end will be displayed in the area below the buttons.

IMPORTANT

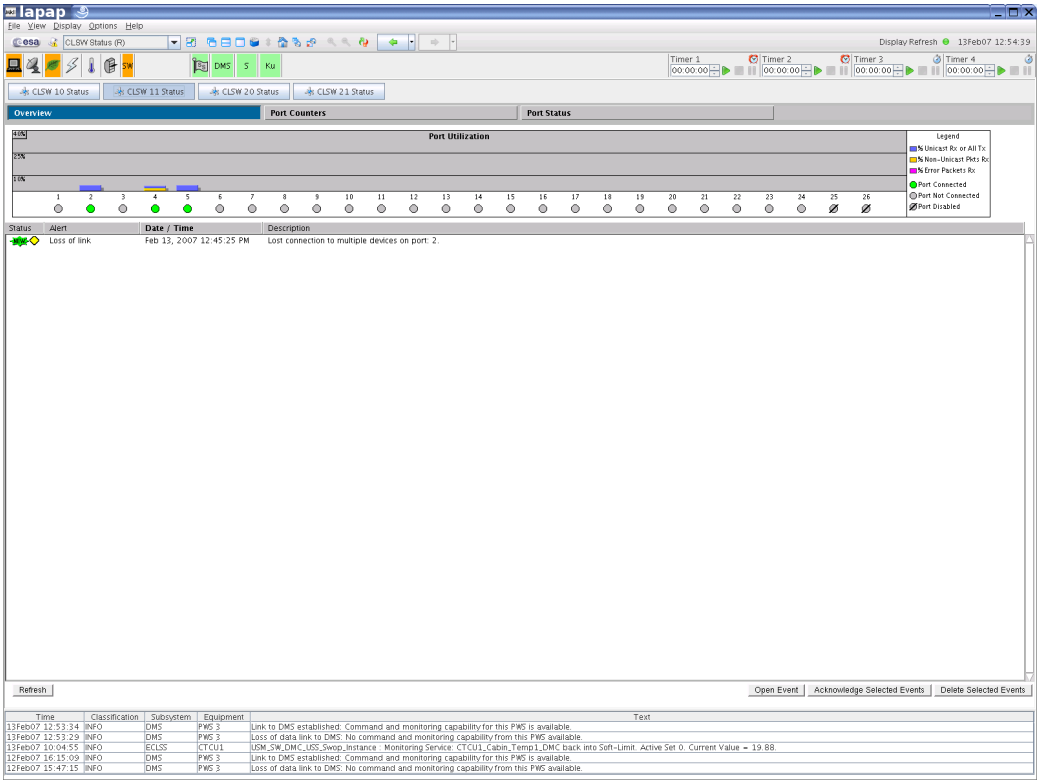
The integration of the CLSW web interface is not yet smooth. See Appendix B for currently known problems.

3.1 The Tabs of the CLSW Browser

The CLSW browser contains three tabs (displayed as three gray buttons below the **CLSW Status** buttons). These tabs contain the following sub pages:

3.1.1 Overview

This page gives a graphical overview about the utilization of each port.



CLSW Status Workspace

Below the chart is a list in which events concering the ports arrive. Using the buttons below the list on the right, these events can be handled.

- **Open Event**

  This will open a popup window displaying details about the currently selected event.

  - To close the dialog, press **Cancel**.

  - To Acknowledge the event, press **Acknowledge Event**.

  - To delete the event, press **Delete**.

- **Acknowledge Selected Event**

  Every event is tagged with a small NEW icon. This icon indicates, that the event has not yet been acknowledged.

  To Acknowledge selected events, just click the **Acknowledge Selected Events** Button.

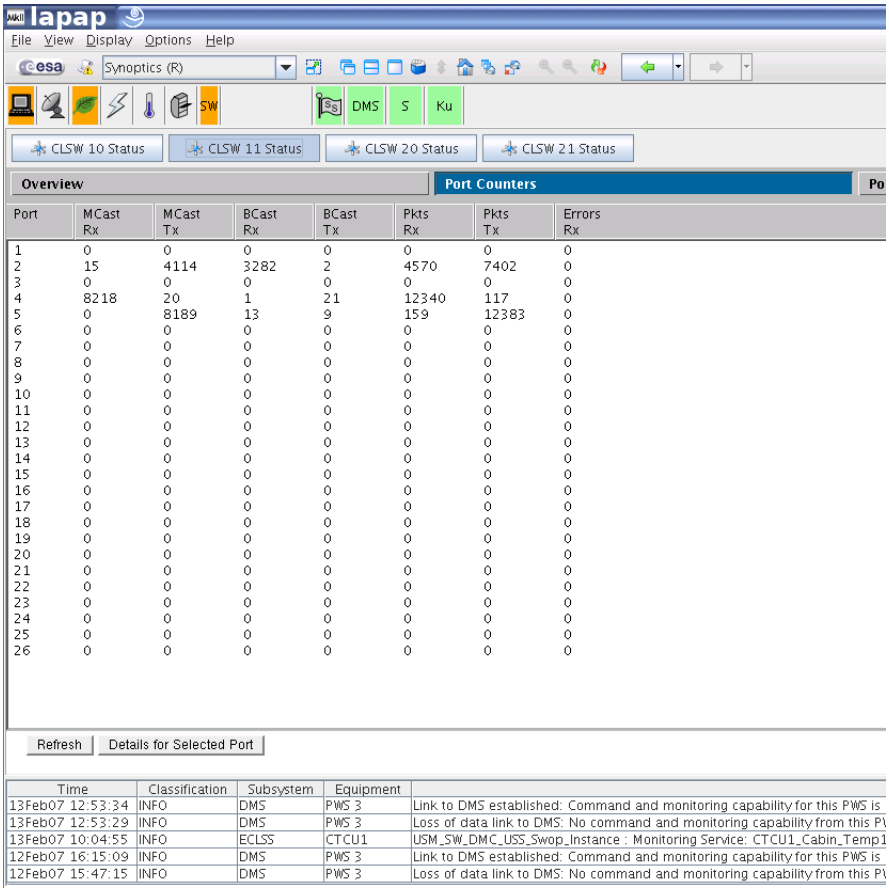
- **Delete Event**

This will delete the currently selected event(s).

3.1.2 Port Counters

This page displays certain counters for each port in a list.

To refresh the list, press the **Refresh** button. To view the details of a port, select it and press the **Details for Selected Port** button.

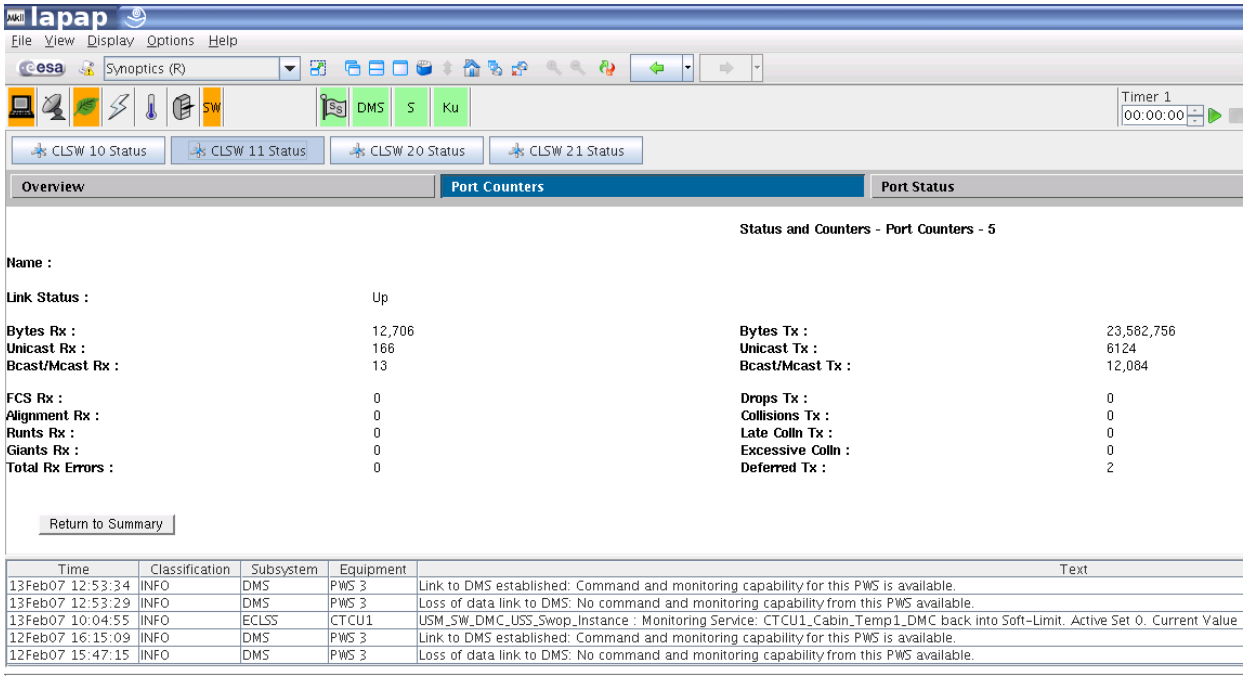


Port	MCast Rx	MCast Tx	BCast Rx	BCast Tx	Pkts Rx	Pkts Tx	Errors Rx
1	0	0	0	0	0	0	0
2	15	4114	3282	2	4570	7402	0
3	0	0	0	0	0	0	0
4	8218	20	1	21	12340	117	0
5	0	8189	13	9	159	12383	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0

CLSW Port Counters

- To refresh the list, press the **Refresh** button.

- To view the details of a port, select it and press the **Details for Selected Port** button. This will open the Details page:

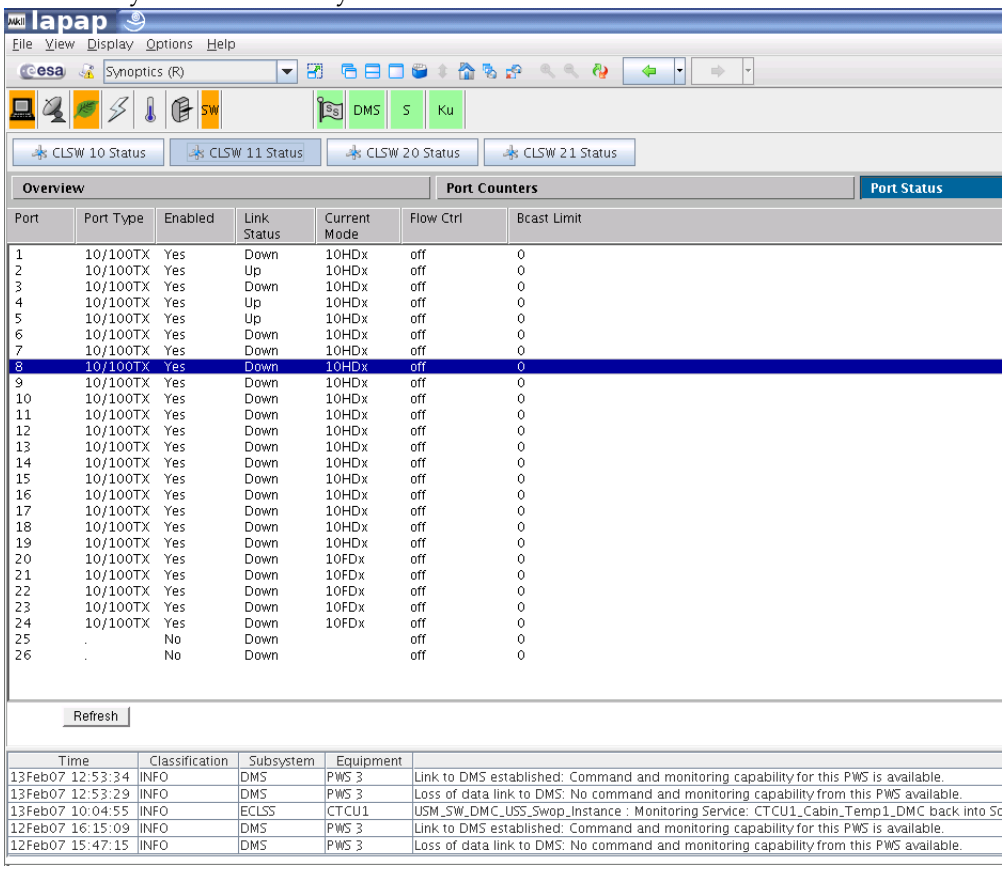


The details page gives a detailed overview about the port. To get back to the previous page, press the **Return to Summary** button.

3.1.3 Port Status

This page displays the current States of each port.

This page offers only one functionality: **Refresh**.



CLSW Port Counters

Chapter 4

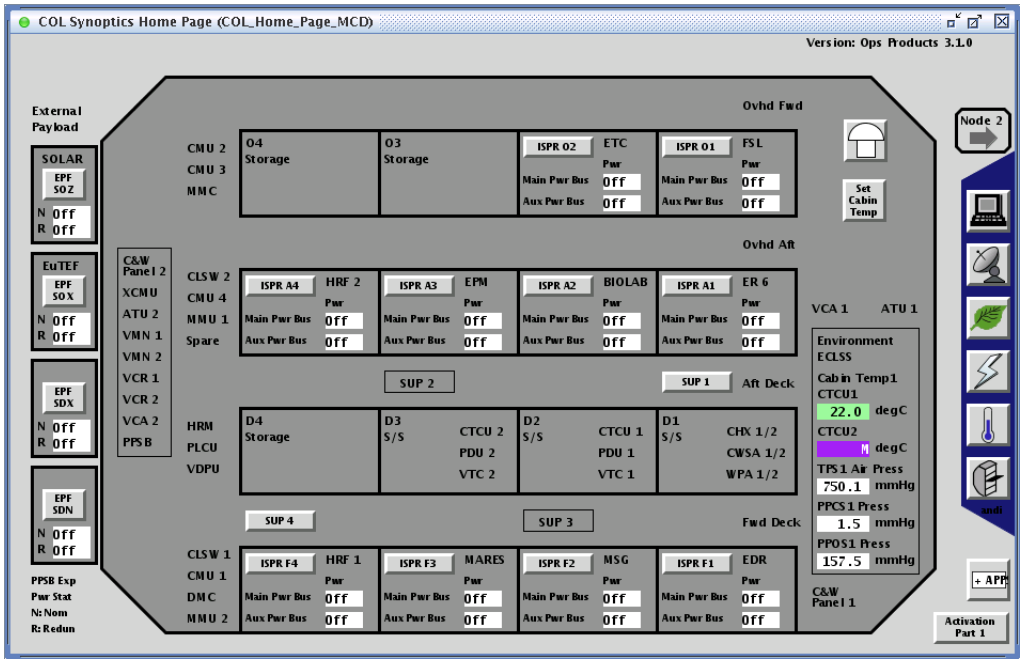
Synoptic Display System

The Synoptic Display System provides online access to the nominal part of columbus' subsystems. Data is directly derived from the DMS data pool and command are initiated directly to the on-board execution software by the crew.

The synoptics show subsystems and equipment in graphical schematics with data representation in alphanumerical output boxes, states, animated symbols and line colorcoding. Commands are predefined so that the crew can issue the command by either clicking on a button or selecting the command from a list then clicking **Execute**.

The displays in Lapap Mk II are organized in a hierarchical way. There is a main display showing an abstract overview of the whole columbus module with all its subsystems. It is by default configured as the **Home Display** and will be loaded automaticaly at application startup. It can be opened by clicking onto the **Load Homepage** button in the toolbar or in the **View** menu. From this display it is possible to navigate to the displays of the different subsystems.

The Synoptic Displays provide commanding for all subsystems, display **Measurement**s acquired by the DMS and indicators of limit supervision and data validity.



The Synoptics Home Page

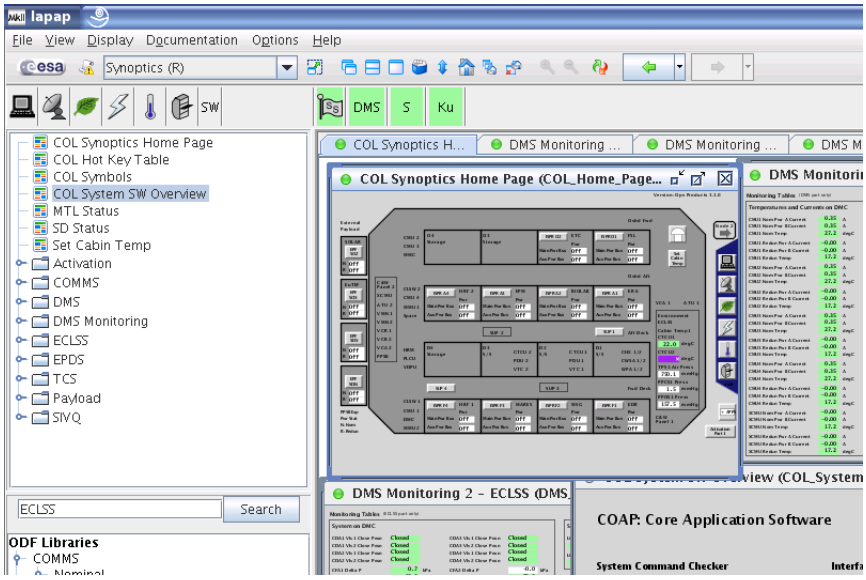
4.1 Window Handling

This section describes the window handling according to the **Synoptic Display**s. All the functionality described here refers to the **Synoptic Display** area.

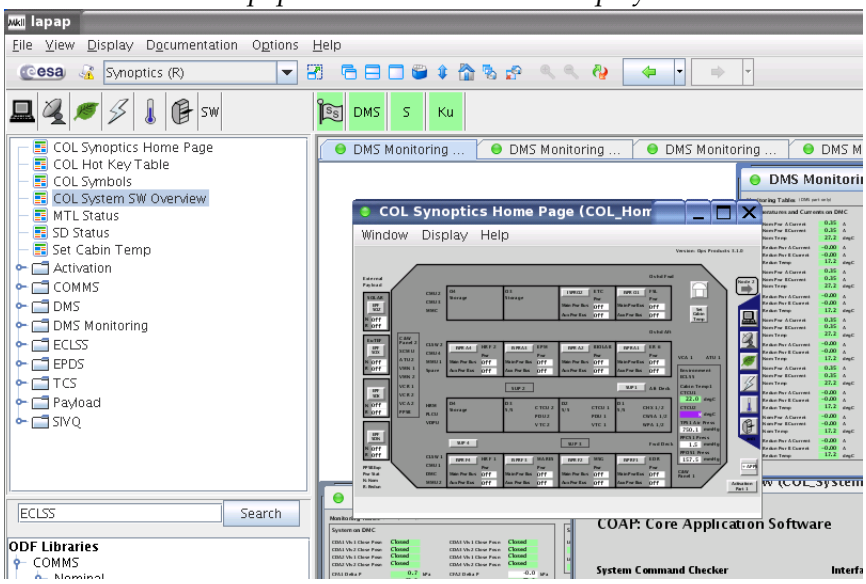
4.1.1 Docking / Undocking Displays

Undocking a display means to open the Display in a separate frame which is independent from the **Synoptic Display Executor** frame. This Frame has an own menu bar with the according Menu items.

To undock a Display, select it and choose **Display \ Undock** from the menu bar. Alternatively you can perform a right click on the tab of the Display you want do undock and select **Undock** from the context menu.



Lapap MK II With a Docked Display



Lapap Mk II With an Undocked Display

The Menu of the undocked Display contains the structure described below. To find Instructions for the Menu Items follow the links to the referring sections in this manual.

- **Window**
  - **Dock** --> Section 4.1.1
  - **Close** --> Section 2.1.3.1
- **Display**
  - **Find Text As You Type** --> Section 2.1.3.10
  - **Find Parameter In Other Displays** --> Section 2.1.3.11
  - **Properties** --> Section 2.1.3.12
- **Help**

– **Current Display** --> Section 2.1.6

To dock the Display, choose **Window \ Dock** from the Displays menu bar.

4.1.2 Toggling Tabbed Mode

Displays can be shown either on a tabbed window (one window at a time) or as iconized internal windows (many in parallel). This option toggles between these two modes.

In this manual the mode showing the displays as independent internal windows will be called "windowed mode", and the mode showing one window at a time will be called "tabbed mode".

To toggle between the two modes press the icon in the tool bar or select **Display \ Toggle Tabbed Mode** from the menu bar.

If the application is set to tabbed mode, each display will be shown in the Synoptic display hierarchy in full size. To switch between displays the tabs have to be used.

While in windowed mode, each display will be shown in a own internal Window which can be resized and moved.

4.1.3 Display Size

4.1.3.1 Changing Display Size

Displays can be maximized within the Synoptic Display area using the maximize button of the internal frame. If a Display is not maximized, it can be resized like any other window by clicking and dragging its borders to the desired size.

4.1.3.2 Synoptic Default Size

Although the size of a Display can be chosen manually, there is a default size for each Display. This original size is the size it has been designed for and in which it can be viewed best.

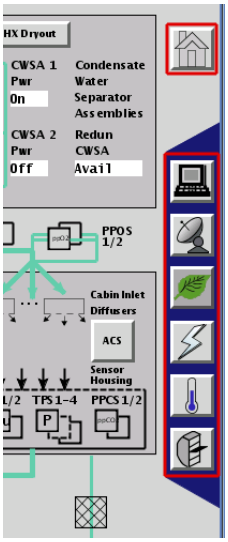
To restore this default size select **Display \ Synoptic Default Size** from the menu or click the referring icon in the tool bar.

IMPORTANT

This does only work if the synoptic display area is not set to Tabbed Mode.

4.2 Synoptic Navigation Buttons

Every Display contains specific navigation buttons on the right side. These buttons represent the different subsystems of the columbus module and selecting one of them opens the "Functional Overview" - display of the according subsystem. The home display contains an additional Button to close itself. Every sub display contains a button at which (re)opens the home display.



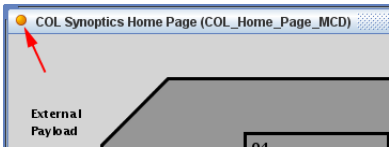
The Synoptic Navigation Buttons

For every open display a tab is displayed on top of the "synoptic display area" allowing the crew to return to an previously opened display by clicking on it.

4.3 Display Features

4.3.1 Overall Monitoring Status

The overall **Monitoring Status** of **Measurement**s on the particular display is indicated by the small indicator in the title (or tab) of a display. If one of the **Measurements** is out of its soft or hard limits, it turns light orange or orange. It always has the color of the **Measurement** with the most critical **Monitoring Status**. (I.e. the overall **Monitoring Status** of the **Home Display** shown here is shown as an orange dot, because some **Measurements** within the display are out of their hard limits).



Overall Monitoring State Indicator

4.3.2 Element Types

Synoptic - Displays can contain different types of command or control elements which offer different functionality.

4.3.2.1 Navigation Buttons

Rectangular buttons with sharp edges are Buttons which will open displays of certain sub components.

4.3.2.2 Command Buttons / 2 Step Commanding

This special kind of button can be identified by its round edges. These buttons have a different kind of behaviour as the normal buttons within Lapap Mk II. They do not open displays or have other navigation features. These Buttons are to execute commands within the subsystems.

Instead of immediately executing a command when pressing it, the button will remain pressed until the **Execute** Button within the display is clicked. This **2 Step Commanding** is a way to help the user avoid making mistakes while executing commands, as he has to select the command an execute it in two different steps rather than simply clicking onto a button.

4.3.2.3 Measurements

Measurements are numerical representations of certain values in different subsystems (i.e. temperature, water flow, pressure, etc.). They are usually displayed as output boxes with black text and a white background. They change their background color according to certain situations. These colors indicate their **Monitoring Status**. The following table illustrates the meaning of each possible background color.

Table 4.1: Meaning of Measurements Background Color

Color	Valid	Monitored	Out of Soft Limits	Out of Hard Limits
White	X			
Pale Green	X	X		
Light Orange	X	X	X	
Orange	X	X		X
Purple				

- *White*

  The value is valid and within its normal range.

- *Pale Green*

  The value is valid, within its normal range and monitored.

- *Light Orange*

  The value is beyond its soft limits.

- *Orange*

  This value is beyond its hard limits.

- *Purple*

  The value is not valid. This situation may occur if the connection to the DMS is lost. Additional a status indicator "M" is shown. (M means "missing).

There are two important properties for each measure: **Monitoring Status** and **Acquisition Status**. These Properties can be viewed in detail in the Properties Dialog of a certain **Measurement**.

- **Monitoring Status**

  Monitoring means that a **Measurement** is observed by a mechanism determining if the value is within the ranges of its soft and hard limits, or is as expected.

- **Acquisition Status**

  The acquisition of a **Measurement** value is the point of time at which the value was retrieved from the data pool.

4.3.2.4 Graphical Elements

Within certain displays, there are a number of inactive elements (like arrows, lines and symbols) which do not provide any functionality except changing its color or appearance depending on the values and states of certain **Measurement**s.

4.3.3 Display Context Menus

Every display contains elements that provide a context menu. It can be opened by clicking the right mouse button within the display. Depending on the display area location where the context menu is instantiated different options are provided:

If the context menu is opened by clicking into an empty area within the display, these general options will appear:

- **Copy Display Title to Clipboard**

  Copies the exact title of the current display into the systems clipboard. This functionality is useful if the user wants to use the exact title of the display in another application (i.e. Open Office).

- **Show Information...**

  Opens help for the current display within the Documentation Plugin.

These general options are also available in the context menus of all other element types within a display.

4.3.3.1 Context Menu for Buttons

Buttons provide a special properties dialog within the context menu. The items in this context menu are:

- **Properties**

  The Properties Dialog for the button contains two tabs with the following properties:

  – Tab: **General**

    * Enabled: values {yes | no}, if yes, the button will work.

  – Tab: **On Press**

    * Action: The action this button will perform. In General it will open the display of a component within the subsystem.
    * New Window: values {yes | no}, if yes, the display linked to this button will be opened in a new window (or tab)

4.3.3.2 Context Menu for Labels

Labels provide the function **Copy Label to Clipboard**. Choosing this menu item will copy the caption of the label into the clipboard.

4.3.3.3 Context Menu for Measurements

Measurements offer the most complex context menu of all element types. The context menu will look slightly different depending on what type the current **Measurement** is. As the differences are only slight, this section does not deviate between the both types.

PROPERTIES

- **Properties**

  The Properties Dialog provides detailed information about a **Measurement** or a **Computation**.

  IMPORTANT

  The values in the **Properties** dialog of a **Measurement** are not updated by default. That means the displayed values are retrieved when the dialog is opened and not further updated and may deviate from the ones which can be seen in the **Synoptic Display**. Select the checkbox **update** in the top of the dialog to enable real time updates.

  The following list contains the most important properties:

  – **Data Source Type**
  values {Telemetry | Computation}.

    * **Telemetry**
    A Telemetry is a value which is directly measured within a component (i.e. a temperature, water flow, etc.)

  - **Computation**
    A Computation isn't a directly measured value. It's a value which is the result of a calculation that combines different values.

- **Opsname**
  A string containing a short, unique name for the **Measurement**.
- **Pathname**
  The Pathname is the hierarchical position of the **Measurement** in the MDB (Mission Data Base).
- **SID**
  The SID is another unique identifier for the currently selected **Measurement**. In this case a number.
- **Formatted Value**
  This value represents the **Measurement** as it will be displayed in the **Synoptic Display**. The source of this formatted (and displayed) value depends on the property Output.
- **Raw Value**
  The raw value is the raw data derived from the source of the **Measurement**. I.e. a temperature sensor provides the measured temperature not "as is", but as a value that has to be interpreted.
- **Engineering Value**
  The engineering value is a value calculated from the raw value of a **Measurement**. I.e. the temperature measured by a temperature sensor calculated from its raw data.
- **Engineering Unit**
  The unit in which the **Measurement** is measured. For example: A temperature measured in °**C** will have the engineering unit **degC**.
- **Type**
  The kind of data. (i.e. a numeric value, a state like ON or OFF, etc.)
- **Output**
  This property controls the source for the formatted value. Values can be "Engineering value" or "Raw value".
- **Acquisition Status**
  Indicates whether the value is acquired (values are reported from the data source) or not (no connection to the DMS data pool could be established or the data could not be acquired by the DMS)
- **Monitoring Status**
  Indicates whether the value is monitored or not.
- **Soft Limit (lower) / Soft Limit (upper)**
  The borders for the soft limit of this value.
- **Hard Limit (lower) / Hard Limit (upper)**
  The hard limit borders of this value.

> IMPORTANT
>
> 
>
> The initial limits for each **Measurement** are configured within the MDB (Mission Data Base). For information related to limits see Section 4.4.

- **Expected Value**
  The expected value of the Measurements monitoring. See Section 4.4.2 for more information.
- **Acquisition Time**
  The time the current value of this Measurement has been retrieved
- **Time Since Acquisition**
  The time that has passed since the acquisition time has been retrieved. Its the "age" of the value.

- **Show In Quick Graph**

  This menu item opens the Line Graph for the current **Measurement**. See Section 4.3.4 for more information.

- **Find Parameter In Other Displays**

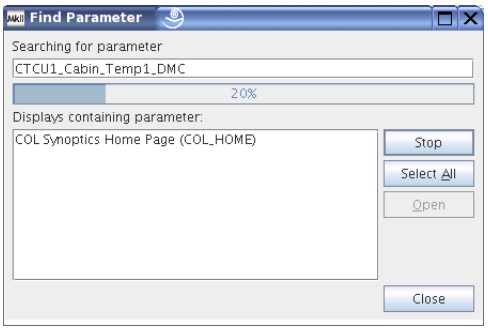
  This functionality is useful if the user wants to find a certain **Measurement** which is referenced by more than one display.

  To search for a **Measurement** in other displays move the mouse pointer over the menu item. A sub menu showing the Opsname of the **Measurement** opens. Select the Opsname of the **Measurement** to open the **Find Parameter** dialog.

  While searching for displays containing the **Measurement**, a progress bar will be displayed, showing the search progress.

  There are some actions available (even while the search is still running):

  - **Stop**
    Stops the search. This function is useful if the searched display has already appeared in the search results and no further searching is needed.
  - **Select All**
    Selects all displays found.
  - **Open**
    Opens the selected displays.
  - **Close**
    Closes the "Find Parameter" - dialog



Find Parameter Dialog

- **Copy Computation to Clipboard**

  If the current **Measurement** is a **Computation**, it is possible to copy the rule which is used to calculate it into the systems clipboard.

- **Copy Opsname to Clipboard**

  If the current **Measurement** is a **Telemetry**, it is possible to copy its **Opsname** into the systems clipboard.

- **Change Monitoring Values**

  This will open the **Limit Manager** for this value. The **Limit Manager** may be used to change the soft limits for a **Measurement**. See Section 4.4 for Details.

4.3.4 Quick Graphs

4.3.4.1 Purpose of Quick Graphs

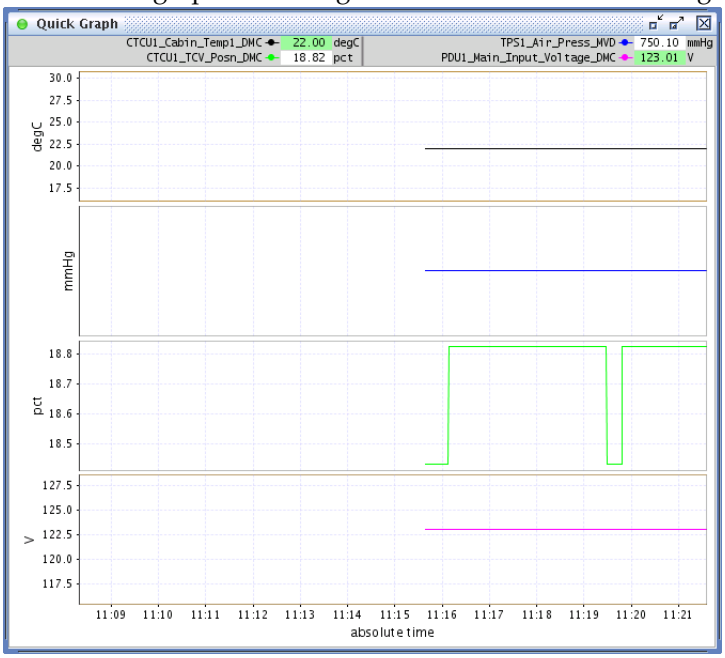
A Quick Graph is a graphical representation of the according **Measurement**. It shows the values of the **Measurement** in relation to the time as a graph. The soft and hard limits are also displayed. Because of this it is easily possible to identify if a value is leaving its limits repeatedly.

Graphs display the value of a certain **Measurement** and its changes over a period of time as a graphical diagram. A Graph can be opened by right clicking upon the value which should be displayed and choosing **Show In Quick Graph** from the context menu.

IMPORTANT

There is always only one Quick Graph open. If "Show As Quick Graph" is selected for another Measurement, The already opened Quick Graph will show both the graphs.

The window of a Quick Graph can be rescaled and the graph will fit its size according to the window. It is also possible to interact with the graph's axes to get a better view of a certain region in the graph.



Line Graph of 4 Numerical Measurements

4.3.4.2 Axis Functionality

The Quick Graph can be scaled and moved along its axis to get a better view of a certain region within the graph.

- **Moving Along an Axis**

  To shift the content of the Quick Graph along an axis, simply click and drag on the axis description. After releasing the mouse, the graph will be redrawn.

- **Scaling Along an Axis**

  To scale the axis, click and drag on the axis description while pressing the **CTRL** key.

IMPORTANT

To make it easier to find the correct position in the Quick Graph to use one of the functions described above, the cursor will change to a hand cursor.

4.3.4.3 Context Menu of a Quick Graph

A Line Graph offers a context menu with the following entries:

- **Save Snapshot**

  This function saves the current state of the line Graph into a `*.PNG` image into the users home directory.

- **Show Information**

  This menu item opens the help dialog of the according display.

- **Copy Display Title to Clipboard**

  This will copy the title of the display according to the **Measurement** into the operating systems clipboard.

The Quick Graph offers a different context menu for its axes. (To open this context menu, move the mouse over an axis description until the cursor changes to a hand cursor):

- **Axis Reset**

  If the axis values have been changed before, this menu item restores the default values for the axis.

- **Axis Auto-Range**

  If this checkbox is selected, the scaling of the axis will be automatically adapted to the values in the graph so that the minimum and maximum value of the axis are within the visible region of the graph.

- **Axis Auto-Move**

  If this checkbox is selected, the graph will scroll to keep the last update within the visible range.

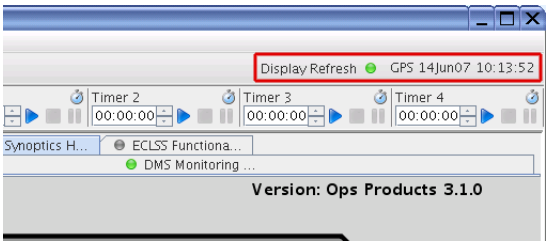
4.3.4.4 Linegraph Menu

If the Line Graph is in an undocked Window, it provides a menu bar with the following structure:

- **File**
  - **Create HTML Report**
    This functionality is useful to generate a detailed report about the current state of the visualized **Measurement**. The Report will be saved into the user's configuration directory
  - **Save Snapshot**
    This function saves the current state of the line Graph into a `*.PNG` image into the user's configuration directory.
  - **Print**
    This will open a common printer dialog to configure the printer settings and to print the current state of the line graph.
  - **Print Preview**
    To setup the page before printing the line graph, choose this menu point. To take a look at the preview of the page as it would be printed, click the OK button.
  - **Properties**
    Choose this menu item to open a dialog showing the properties of the line graph.
  - **Close**
    This will close the line graph window.
- **Window**
  - **Dock**
    Choose this menu point if you want to dock the line Graph window into the Synoptic Display area.
  - **Close**
    Choose this menu point if you want to Close the Quick Graph.
- **Help**
  - **Current Display**
    This will open the display help for the display according to the line graph.

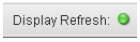
4.3.5 Performance Indicators

The Performance indicators in lapap inform inform about the synoptic system's performance and the source of the displayed time in the toolbar.



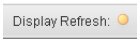
Performance Indicators

- The first indicator item is the **Display Refresh Indicator**. It informs about the update latency of the display. Update latency is the time between receiving the data and finishing the rendering of the display. It can be found at the left of the applicatons time in the toolbar.



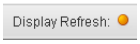
Performance Indicator Shows: Update Latency < 800 ms

If the update latency is less than 800 milliseconds the icon is green.



Performance Indicator Shows: Update Latency between 800 and 2000 ms

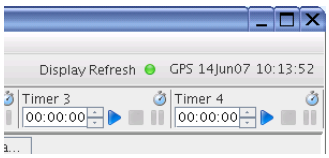
If the latency is between 800 and 2000 milliseconds the color changes to light orange.



Performance Indicator Shows: Update Latency > 2000 ms, data is dropped

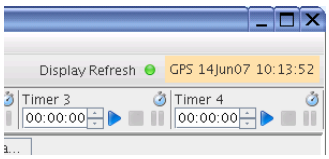
If its color is orange the latency is bigger that 2000 ms. That means that data is dropped, because data from interface cannot be handled.

- The second item concerns the time distribution. It indicates whether the time is derived from the DMS or not.



Time Field: DMS Derived Time

If the time displayed in the toolbar is derived from the DMS, it will be displayed with a gray background.



Time Field: Local Time

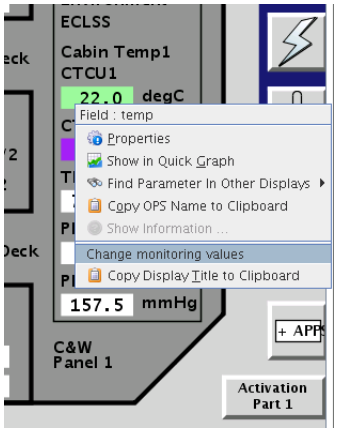
If the DMS time can't be derived, the local time will be displayed on a light orange background.

More information about the communication state of the DMS can be found in Chapter 5.

4.4 Limit Manager

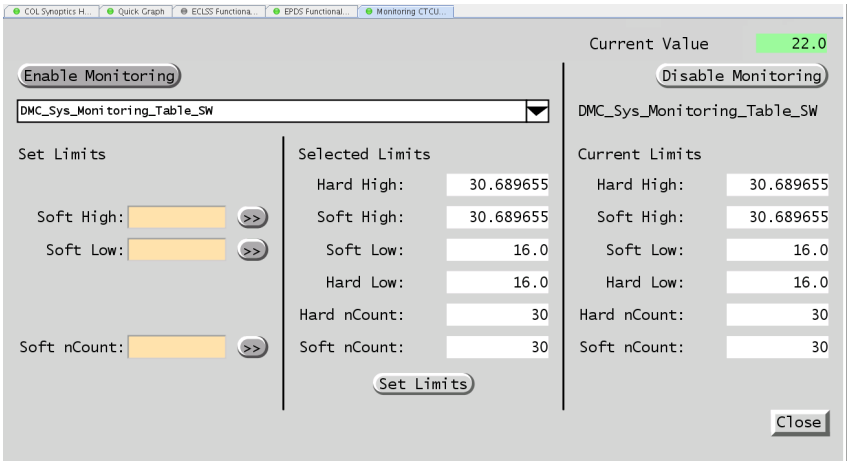
The **Limit Manager** is a tool to change the monitoring values of a **Measurement**. It is realized with **Synoptic Display**s. Depending on the type of the **Measurement** (numerical **Measurement**s or State codes based on discreet **Measurement**s) the according display will be opened allowing the user to set the soft limits or to declare an expected value for the **Measurement**. As the two types of displays are different, they are described separately.

To open the **Limit Manager** select **Change Monitoring Values** from the context menu of a **Measurement**.



Opening The Limit Manager For a Measurement

4.4.1 Changing Monitoring Values For Numerical Measurements



Limit Manager (Numerical Measurement)

The display consists of the following elements:

- **Measurement** Name (in the display title) and current value

  as the **Limit Manager** is realised as a synoptic displays, the value displayed on the right offers the same context menu as other **Measurement**s.

- Command Buttons to enable / disable monitoring

  Using this command buttons enables / disables the monitoring of the current **Measurement**. As usual in **2 Step Commanding**, the command will only be executed if the **Execute** button on the bottom of the display is clicked.

- Current Limits section

  Displays the current limits of the **Measurement**. The fields are read only and only for verification.

- Set Limits section

  New Limits can be entered into the input fields. Besides the values are command buttons to set the values with **2 Step Commanding.** See Section 4.3.2.2.

To change a limit, perform the following steps:

1. Click onto the value that should be changed

   The displayed value turns into an editable input box

2. Enter the new Value

3. Click the command button besides the changed value

   This will enable the **Execute** button at the bottom of the display.

4. Click the **Execute** Button at the bottom of the display

   The new value will be updated immediately and can be verified in the current limits section after the next data pool update.

If invalid data or a value that is not allowed has been entered, a message window will open and inform the user. The invalid value will be replaced with the current setting.

Changeable values:

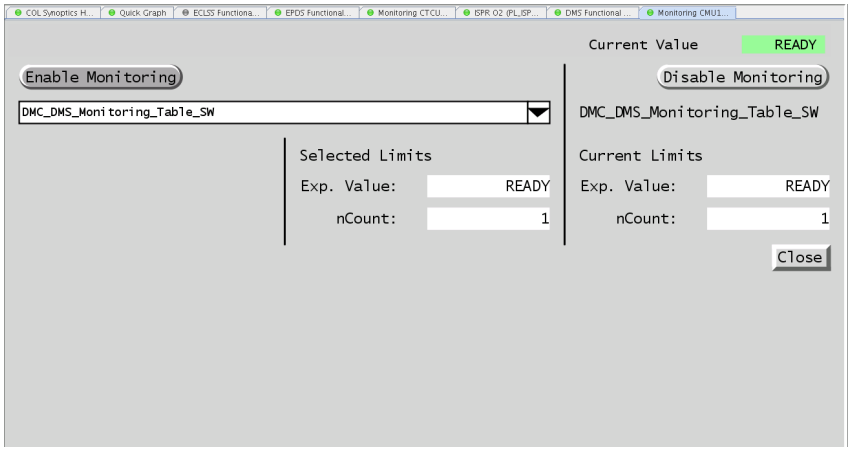
- **Soft High Limit / Soft Low Limit**

  The upper / lower border of the soft limit range. These values may only be changed to values within the hard limits of the **Measurement**. The **Soft High Limit** has to be greater than the current **Soft Low Limit** and the **Soft Low Limit** has to be smaller than the current **Soft High Limit**.

- **Soft nCount**

  This value determines how often the monitored **Measurement** may leave the range of its soft limits before a SAW Message will be generated.

4.4.2 Changing Monitoring Values For State codes (Based on Discreet Measurements)



Limit Manager (Discreet Measurement)

The display for discreet **Measurement**s consists of basically the same elements as a display for numerical ones, except:

- Set Limits section

  The **Expected Value** can be selected from the drop down box rather than typing the new value. The **nCount** value can be entered into the input field. Besides the values are command buttons to set the values with **2 Step Commanding**.

Changeable values:

- **Expected Value**

  As discreet **Measurement**s can only be set to specific values, there is no "range" in which the value should be. This is why discreet **Measurement**s have no soft or hard limits. Instead they are checked for an expected value.

- **Soft nCount**

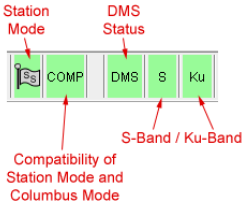
  This value determines how often the monitored **Measurement** changes into a State code which is different from the expected value.

Chapter 5

Status Displays

There are four icons in the Lapap tool bar which inform the user about the communication state of certain elements. These elements are displayed using different colors to inform about the state of the system they represent.

Depending on which element is considered, these colors have to be interpreted differently.



Status Displays

5.1 Station Mode

As long as values for the Station Mode can be acquired, its icon will indicate the current value of the Station Mode. Its background color depends on the current mode.

If the Station Mode value could not be acquired, the icon will be displayed with a purple background, showing a question mark.

Table 5.1: Station Mode Values

Symbol	Meaning
	**Standard**
	**Microgravity**
	**Reboost**
	**Assured Safe Crew Return**
	**Proximity Operations**
	**External Operations**
	**Survival**
	Value can't be acquired.

5.2 Station Mode Compatibility

The Station Mode Compatibility indicator shows if the current Columbus mode is compatible to the ISS station mode:

- **pale green**: Status measurement could be acquired, Columbus mode is compatible with the current ISS station mode.
- **orange**: Status measurement could be acquired but the current Columbus mode is not compatible with the ISS station mode.
- **purple**: Status measurement could not be acquired.

5.3 DMS Status

The status of the DMS is indicated using two different visual components. The first one is the DMS Status Display and the second one is the DMS time shown in the Date and Time Group.

Depending on the acquisition state of three certain **Measurement**s in the data pool the background color of the DMS Status Display is chosen.

- **pale green**: One or more **Measurement**s can be acquired and a physical connection to the DMS therefore exists.
- **gray**: None of the defined **Measurement**s can be acquired and a loss of connection to the DMS is assumed.

The background color of the DMS time in the Date and Time Group depends on its acquisition state:

- **gray**: DMS time can be acquired.
- **light orange**: Loss of DMS time distribution.

See Section 4.3.5 for more information about the DMS time.

5.4 S-Band / KU-Band

The link state indicators use the following policy to determine their background color:

- **pale green**: Status measurement could be acquired, a connection is present.
- **gray**: Status measurement could be acquired but its value indicates that no connection is present (Loss Of Signals).
- **purple**: Status measurement could not be acquired. No connection is present.

Chapter 6

System Message Panel

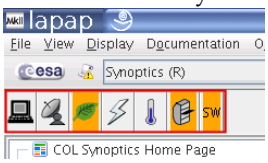
This chapter describes the usage of the **System Message Panel (SMP)**. The **SMP** is used to display the messages which are send by the different subsystems.

The **SMP** is divided into two different views:

- The **System Message Panel** at the bottom of the Lapap application window displaying the last 5 messages. This view cannot be filtered or sorted.

- A view called **Message Buffer View** which allows the user to view all messages. It allows the user to filter and sort the messages and to save and load a set of messages

Another set of components related to this functionality can be found in the tool bar. The **SAW** Icons.



The SAW Icons

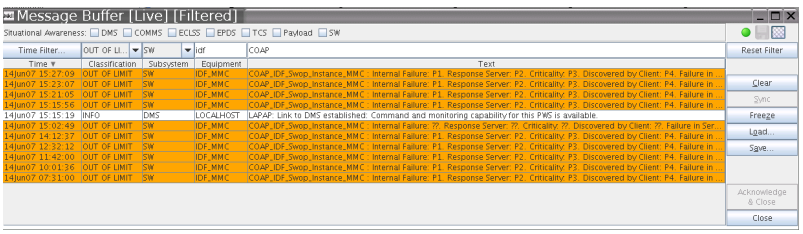
The **Message Buffer View** in combination with this icons is needed to handle the Situational Awareness - functionality. See Chapter 7 for more information.

6.1 The Message Buffer View

The **Message Buffer View** is a separate window displaying all or a subset of the messages. There are several ways to open it:

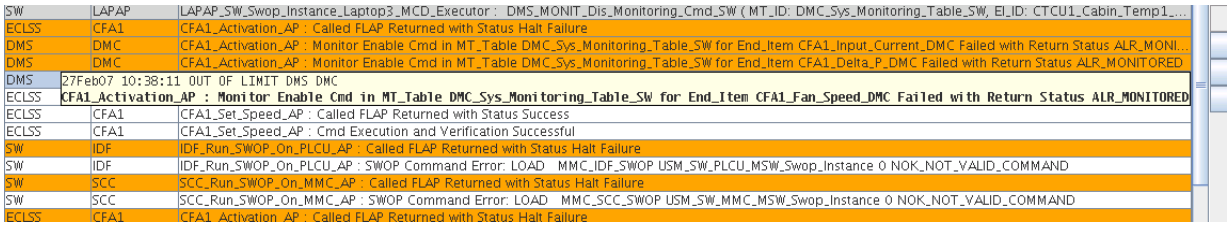
- By right-clicking onto the header of the **System Message Panel** at the bottom of the Lapap application window and selecting **Show Message Buffer** from the context menu.
- By double-clicking onto the header of the **System Message Panel**.
- By choosing **Show Message Buffer...** in the **View** menu.
- By clicking The Message Buffer View Icon in the Toolbar. See Section 2.2
- By clicking onto a **SAW** Icon in the tool bar.

Some Messages will be displayed in a different color (i.e. OUT OF LIMIT) to show their **Situational Awareness** context.



The Message Buffer View

To get a better view of the text of a certain message without resizing the **Message Buffer View** just double - click the message. A tool tip will be displayed showing the full text.



The tool tip of a message

6.1.1 The columns in the Message Buffer View

Every message in the **Message Buffer View** contains different fields. These are:

6.1.1.1 Time

The on-board time at which the message was generated.

6.1.1.2 Classification

The classification of the message. There are four possible values: "OUT OF LIMIT", "ADVICE", "ERROR" and "INFO". The following list shows the Classifications sorted from important to less important.

- **OUT OF LIMIT**

  "OUT OF LIMIT" - Messages can occur in two possible cases. At first they occur if a monitored measurement leaves its range. The second case in which OUT OF LIMIT messages may appear are critical errors, i.e. if a certain software component in the columbus module crashes.

  For more information on measurements and monitoring, see Section 4.3.2.3.

- **ADVICE**

  Indicates a message which should be understood as a message with a higher priority as a message of the type INFO. Though they do not indicate critical errors or malfunctions, users should always check messages of this type.

- **ERROR**

  Indicates the occurrence of an operational or functional error in a subsystem. I.e. the user has tried to execute a command which was not allowed at that point of time.

- **INFO**

  A message with this classification is an general information.

6.1.1.3 Subsystem

The subsystem according to the current message.

6.1.1.4 Equipment

The equipment of the subsystem. A equipment can be understood as a complete functional unit within a certain subsystem, not only a single construction unit (like screws, LEDs, etc).

6.1.1.5 Text

A human readable, textual description of the message.

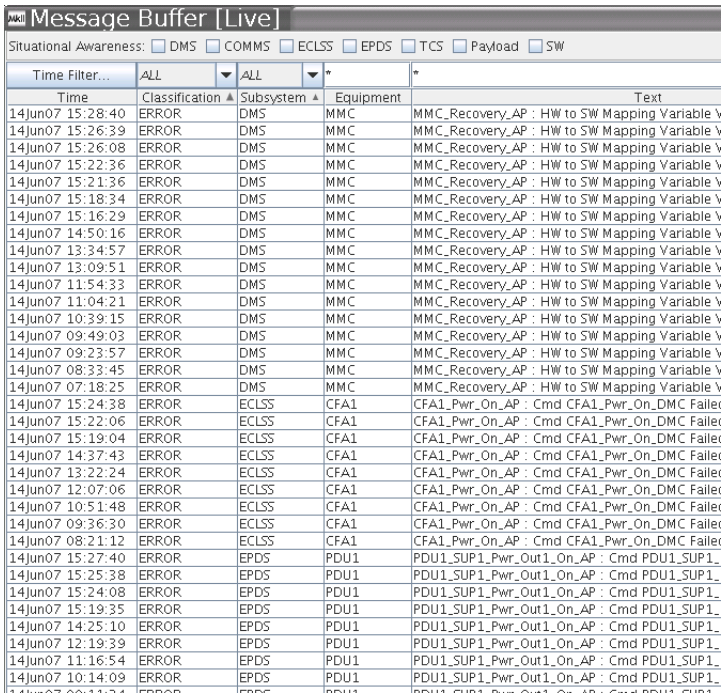
6.1.2 Sorting the columns of the Message Buffer

When the Message Buffer View is opened, it will be sorted ascending by Time.

The Messages in the **Message Buffer View** (and in the **System Message Panel**) can be sorted by clicking onto the header of the according column. After a column has been sorted, a small arrow in the header of the column shows whether the order is ascending or descending.

It is possible to sort the list according to more than one column. The column which has been clicked most recently provides the main order (i.e "Classification"). The messages are sorted in a way that ensures the entries in the Classification column are ascending. So the previously sorted column ("Subsystem" in this case), is sorted ascending too, but respecting the main order of the Classification column.

To reset the sort, double click on a column. This will apply the main order to it and remove the assortments of all other columns.



Sorted by "Classification" as the main order and then by "Subsystem".

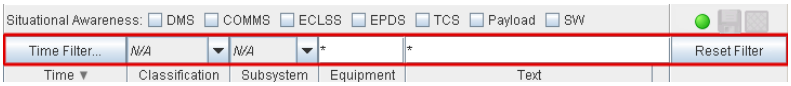
6.1.3 Actions in the Message Buffer View

On the right side of the **Message Buffer View** window are different buttons which offer functionality to filter the list, to load and save sets of messages and to freeze and unfreeze the list.

6.1.3.1 Filter

The filter functionality can be used to find a certain message. Also the amount of displayed messages in the *Message Buffer View* can be decreased. There are several criteria according to which the messages can be filtered.

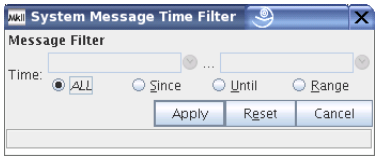
The Situational Awareness check boxes at the top of the Message Buffer View are mentioned in Chapter 7.



The Filter Controls for the Message Buffer View

- Filtering according to the message time:

  Clicking on the **Time Filter...** Button opens the **System Message Time Filter** dialog. This dialog can be used to define a Filter for the time of the messages.

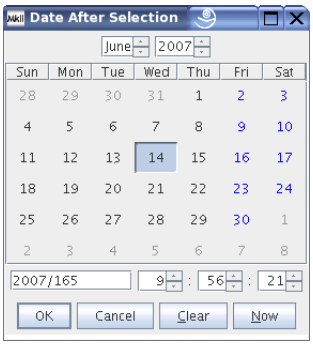


The System Message Time Filter

The following filtering options can be selected:

- **N/A**: The messages will not be filtered according to the time they arrived
- **Since**: All messages since this point in time will be displayed in the Message Buffer View
- **Until**: All messages that occurred earlier than this point of time will be displayed
- **Range**: All messages within the selected range will be displayed

If any option except **N/A** is selected, one or both text fields will be enabled. A click on the clock symbol next to an enabled text field open a simple calendar dialog. This dialog can be used to select a time for one of the text fields. The title of the calendar dialog indicates which date will be configured.



Calendar Dialog

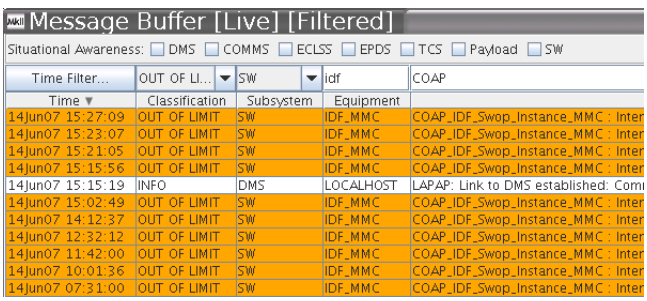
In this calendar the desired point of time can be selected. Click the button **OK** to set the selected point of time in the filter dialog, or click **Clear** to remove an existing selection. The button **Now** selects the current time in the calendar dialog.

- Filtering according to the other fields of the message:

  There are two drop down and two text fields for the related attributes of a system message. Use these text fields to search for messages with a certain attribute.

  - **Classification**
    This drop down box can be used to select the classification of the messages which shall be found
  - **Subsystem**
    This drop down box can be used to select the subsystem to which the messages shall belong.
  - **Equipment**
    Enter search criteria for the field "equipment" into this text field.
  - **Text**
    Enter search criteria for the field "text" into this text field.

  You may use wild cards in the two text fields. The wild card * (one or more characters) and ? (exactly one character) are supported by the filter.



Filter Filled

IMPORTANT

Messages from the subsystem DMS will always be displayed, even if they don't match the filter criteria.

6.1.3.2 Clear

A click on this button removes every message from the **Message Buffer** list. The messages are simply hidden and an empty list will be displayed. There is no way to permanently delete the messages from the system. To bring back the messages that have been hidden, click **Sync**.

6.1.3.3 Sync

A click on this button "synchronizes" the **Message Buffer View** with the system. This means that all messages since the start of the application will be displayed. All filters will be removed. If old messages had been loaded into the **Message Buffer View**, they will be removed to display the current messages.

6.1.3.4 Freeze

If the **Message Buffer View** is frozen, no new Messages will be displayed in the message list. This behavior is helpful when a user searches for a specific message in the list. So he won't get irritated by new messages appearing in his search results. As long as the Buffer is frozen, the caption of the **Freeze** - button will change to **Live**.

If the messages in the view are saved to a `*.CSV` - file while it is frozen, only frozen messages will be saved to the file.

6.1.3.5 Live

The "Live" - button unfreezes the **Message Buffer View** and all messages that have been sent while the **Message Buffer View** was frozen will appear in the list. The **Live** - button also removes loaded message snapshots from the buffer and returns to the current messages.

6.1.3.6 Load

It is possible to load a set of old messages into the **Message Buffer** using the **Load** - Button. After a set of old messages has been loaded, only these old messages will be displayed in the **Message Buffer**. To return to the live messages click onto the **Live** button. The loaded messages will then be discarded.

6.1.3.7 Save

To save the messages which are currently in the **Message Buffer View**, use the **Save** - Button.

IMPORTANT

All live (or frozen) messages will be saved to the file, even if they do not match the current filter settings. Instead of saving only matching messages the filter settings are put into the `*.CSV` - file. After a reload the filter settings in the file are set automatically !!!

6.1.3.8 Acknowledge & Close

If the **Message Buffer** was opened in situational awareness context this button is enabled. See Section 7.5.1 for more information.

6.1.3.9 Close

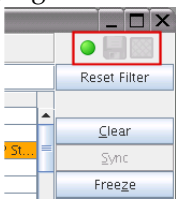
This button simply closes the **Message Buffer View**.

6.1.3.10 Showing Event Help for a message

To retrieve further information about a message it is possible to display event help by right clicking onto a message and selecting **Show Message Help** from the context menu. The event help will be opened in the main window of Lapap Mk II, after the **Documentation Worspace** has opened. To get back to the display which was open before select the according workspace in the **Workspace** chooser.

6.1.4 The Icons in the Message Buffer View

Above the **Filter** - button are three icons displaying the current state of the **Message Buffer View**:



The Icons in the message Buffer View

6.1.4.1 The "Live" Icon

The **Live** icon on the left indicates that the messages currently displayed in the **Message Buffer View** are synchronized with the application. In this case a green dot is displayed. If the **Message Buffer** is in frozen state the dot is gray.

6.1.4.2 The "Loaded Messages" icon

the middle icon displaying a floppy disc indicates that the messages in the **Message Buffer View** are loaded from a `*.CSV` - file. If the **Message Buffer View** is in live - mode the floppy disc is displayed gray.

6.1.4.3 The "Filter" icon

If a filter is applied to the **Message Buffer View** a small funnel icon is displayed. If no filter is applied the funnel is displayed gray.

Chapter 7

Situational Awareness

This chapter describes the **Situational Awareness** (**SAW**) functionality of Lapap Mk II.

The Situational Awareness functionality of Lapap Mk II informs the user about certain important events. I.e. if a value runs out of its monitoring limits a message with the classification **OUT OF LIMIT** will appear. To make sure that the user recognizes these situations (i.e. in the case that he has not been in front of the screen all the time) **SAW** provides a way to show him that certain events occurred in his absence.

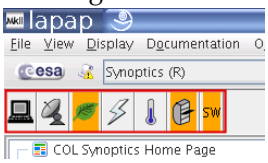
The **SAW** functionality does not change the systems state in any way. It is only providing functionality to inform the user about occurrences of certain events.

7.1 SAW Messages

Messages which are trigger messages for **Situational Awareness** will be displayed in orange in the **System Message Panel** and in the **Message Buffer View**. It is possible to filter the **Message Buffer View** according to messages with **SAW** context. This can be achieved by using the check boxes at the top of the Message Buffer view.

7.2 SAW Icons

The **SAW** icons can be found in the main tool bar of Lapap Mk II. There is an Icon for every subsystem showing whether there is a occurrence of a **SAW** message for the subsystem or not. If a **SAW** message appears for a subsystem, its icon will be displayed with an orange background. This makes it possible to easily recognize every occurrence of **SAW** messages without searching for **SAW** messages by hand.



The SAW Icons in the Tool Bar of Lapap Mk II.

7.3 Opening the Message Buffer View for SAW

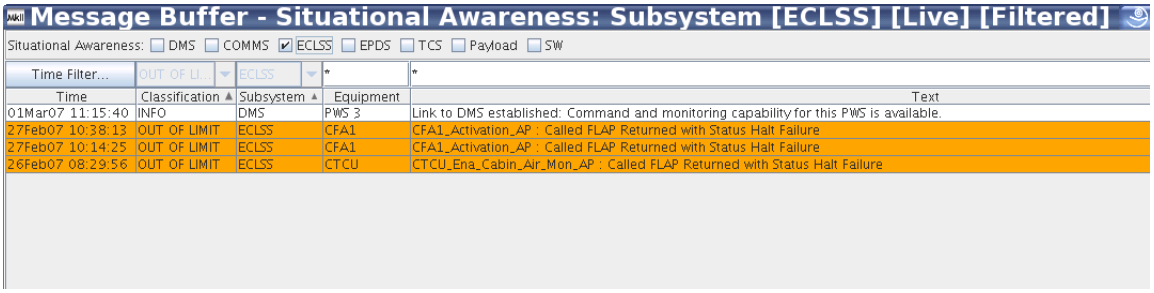
Though it is possible to search for **SAW** Messages by hand, lapap offers a work flow to simplify this process.

The **Message Buffer View** can be opened by clicking onto one of the **SAW** icons in the tool bar of Lapap Mk II. In the case that the clicked icon shows an orange background, the **Message Buffer View** will be opened in **SAW** Mode. The button **Acknowledge & Close** near the bottom right corner of the dialog is now enabled.

if a subsystem icon is clicked which shows a gray background, the **Message Buffer View** will be opened without **SAW** context. But a filter setting will be applied to show only messages according to the subsystem of the clicked icon.

To open the Message Buffer view for **SAW** just click on a **SAW** icon which shows a orange background. This indicates that there are **SAW** messages for the according subsystem.

The view can also be opened by right - clicking onto the icon and selecting **Show Message Buffer** in the context menu.



The Message Buffer View opened for SAW.

7.4 SAW Filter Functionality

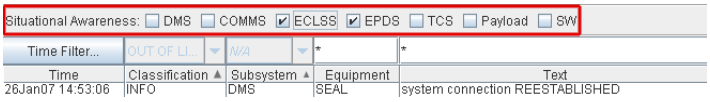
Situational Awareness Messages can be filtered using the check boxes at the top of the Message Buffer View. If one of these check boxes is selected, the dialog will display only messages of the according subsystem defined to be trigger messages for **SAW**.

The Message Buffer View is now in Situational Awareness Mode. The dialog title changes and enumerates the selected subsystems.

It is possible to use the standard filter functionality while the Message Buffer is in Situational Awareness Mode. But the drop down boxes to select the classification and the subsystem are disabled as the **SAW** Mode implies search criteria for these fields.

IMPORTANT

Even in Situational Awareness Mode messages from the DMS are displayed.



The Message Buffer View Filtering SAW Messages

7.5 Handling SAW messages

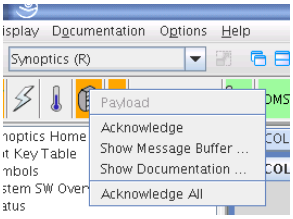
The **Message Buffer View** offers all the functionality it has in its original context. But only **SAW** messages according to the selected subsystems will be displayed.

7.5.1 Acknowledging SAW messages

To Acknowledge the **SAW** message for the according subsystem click the button **Acknowledge & Close**. The **Message Buffer View** will be closed and the icon's background color changes from orange to gray.

Acknowledging a set of **SAW** messages has the following consequences: The **Message Buffer View** will be closed and the according icon will change its background color back to gray. If new **SAW** messages appear for the according subsystem, the messages acknowledged before will not be displayed again if the **Message Buffer View** is opened in **SAW** context for the same subsystem the next time.

It is possible to acknowledge **SAW** messages without opening the **Message Buffer View**. Just right - click onto the icon of the subsystem and choose **Acknowledge**. To acknowledge all subsystems at once choose **Acknowledge All**.



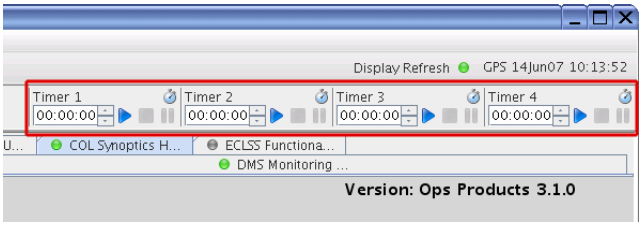
The context menu of a SAW icon

Chapter 8

Timer Section

This chapter describes the timer section in the **Date & Time Group** within Lapap MK II.

The timer section contains four similar timers which can be configured and used for different purposes.



Timer Section of Lapap Mk II

8.1 Timer Types

The timer section in the tool bar of Lapap Mk II contains four timers.

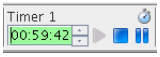
These timers can be configured in two ways:

- **Alarm Clock Timer**

  These timers can be identified by the alarm clock symbol.

- **Count Down Timer**

  The stop watch symbol identifies this timer type.

Both timer types count backwards and display the remaining time in an input field. Its background color changes to indicate the remaining time:

- **green** = remaining time > 1 minute
- **light orange** = remaining time < 1 minute
- **orange** = timer has reached the target time and is counting forwards to show the time that has passed since then.

The difference between the both timer types is the way the time that the user enters into the input field is interpreted.

8.1.1 Alarm Clock Timer

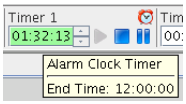
The **Alarm Clock Timer** can be set up to a specified **End Time** (within a 24 hour range). After setting up the **End Time**, a click onto the play button will start the timer. It will display the amount of time that is remaining until the **End Time** is reached. The end time will be calculated according to the time displayed in the upper right corner of the **Date & Time Group**.

This timer type can be used as a reminder which will remind the user about an event which will occur at the specified **End Time**.

To display the **End Time** of the **Alarm Clock Timer**, move the mouse over its label. This will show the **End Time** in a tool tip.

IMPORTANT

The time of the laptop on which the Lapap Mk II application is running is synchronized with the DMS time at application startup. The time displayed in the application window is the time retrieved from the DMS.



Displaying The Target Time of a Alarm Clock Timer

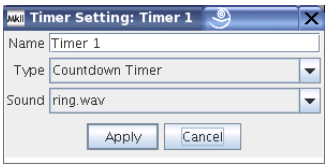
8.1.2 Count Down Timer

The **Count Down Timer** can be set to a time within the range of 24 hours. After clicking the start button this time will be counted backwards.

8.1.3 Timer Settings

To change the settings of a timer open the context menu by right clicking onto the symbol of the according timer. Select **Settings...** from the context menu.

To reset a timer to its default state, select **Reset** from the context menu which opens on a right click on the timer's label.



Timer Settings Dialog

- To make the changes work, click **Apply** or press the **ENTER** key.
- To cancel the operation, click **Cancel** or press the **ESC** key.

The following settings apply to both timer types:

8.1.3.1 Name

Each timer has a label that is displayed above the remaining time. To distinguish the different timers it may be helpful to mark them with a custom label.

This label can be reset to its default value by selecting the context menu item **Reset Label.** This can be done while the timer is running.

8.1.3.2 Type

The timer type can be set to **Alarm Clock Timer** or **Count Down Timer**.

8.1.3.3 Sound

It is possible to select a sound which will be played when the timer reaches the specified time.

Chapter 9

International Procedure Viewer Components

This chapter describes the components that realise the functionality of the **International Procedure Viewer** (**IPV**) in lapap. Lapap contains components to search, navigate and work through **ODF Procedure**s and the related Documentation.

The components are based on the **IPV** and they work similar.

To execute or work through an **ODF Procedure** means to manually perform the steps described in the procedure.

The **IPV** functionality contains three major components:

1. **ODF Book Browser**

   The **ODF Book Browser** provides a tree view in which all accessible **ODF Procedure**s can be found. The root entry of the tree is labeled **ODF Libraries**.

   This view can be used to navigate to a specific procedure and to start it. It also provides a way to search for specific procedures.

   See Section 9.1

2. **Procedure Executor**

   The **Procedure Executor** is a view in which the procedure selected in the **ODF Book Browser** will be opened. Depending on the type of the selected procedure this view looks different.

   This view is used to work with the procedures.

   See Section 9.2

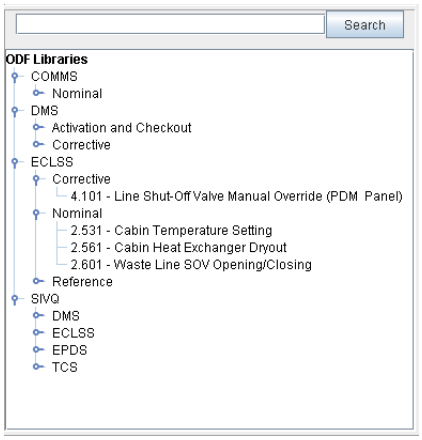
3. **Documentation Viewer**

   The **Documentation Viewer** is useful to search for and display help information on certain topics.

   See Section 9.3

9.1 ODF Book Browser

To access the **ODF Book Browser**, select one of the default **Workspace**s **Synoptics** or **Procedures**. Each one of them contains the **ODF Book Browser**.



The ODF Book Browser

9.1.1 Selecting ODF Procedures

The **ODF Book Browser** provides a tree view which contains all available **ODF Procedures**. To select a certain procedure, navigate through the tree to the desired procedure and simply select it. Depending on the workspace that was previously selected, the procedure will open in a different place.

- In Workspace **Synoptics**

  The **ODF Book Browser** can be found in the lower left corner of this workspace. By selecting a procedure, the workspace **Synoptics & Proc** will be opened and the procedure will be shown there on the left side while previously opened **Synoptic Display**s remain visible on the right side.

  The workspace **Synoptics & Proc** is useful if a specific display is needed to perform the procedure. But as the **ODF Book Browser** is not visible in this workspace, it is necessary to switch to another one to select a different procedure.

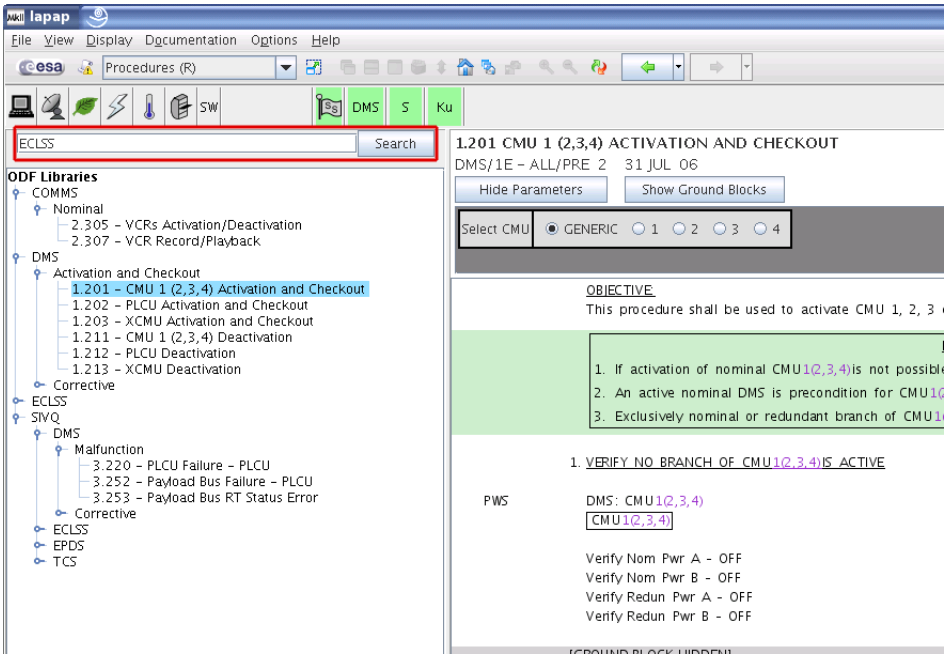
- In Workspace **Procedures**

  The workspace **Procedures** is focused completely on the work with procedures. It contains the **ODF Book Browser** on the left side and the **Procedure Viewer** on the right side.

9.1.2 Searching For Procedures

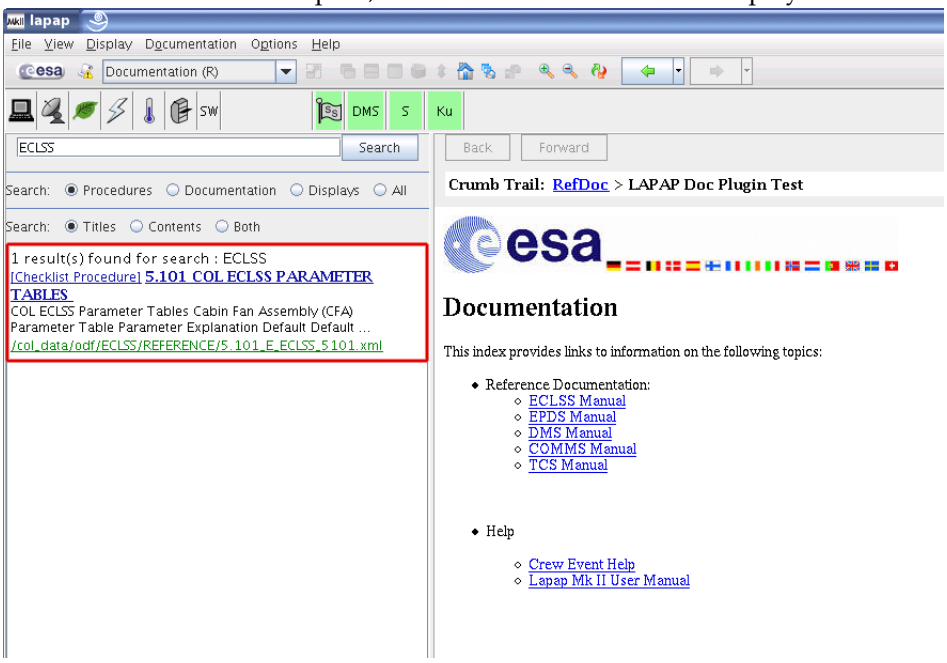
The **ODF Book Browser** provides a search functionality to find certain procedures or documentation related to them.

To search for a procedure, enter a search term in the text box in the **ODF Book Browser** and press the **Search** Button.



Searching For Procedures

This opens the **Documentation** workspace, where the search results are displayed.



Searching For Procedures

Search terms can be specified using the boolean operators **AND**, **OR** and **NOT**. Note that these operators have to be written in uppercase letters to be considered as being operators rather than parts of the query (like in Google).

Examples:

- To Search for a procedure or documentation containing the terms DMS and Overview, use the query "*dms AND overview*".
- To Search for a procedure or documentation which contain only the term DMS but not Overview, use the query "*dms NOT overview*".

If documentation about a certain procedure should be found, the radio button **Documentation** has to be selected and the search has to be restarted. This can be done by pressing the **Search** Button or by typing the **ENTER** key.

It is possible to select the whether the search shall be performed on the titles, the Content or both. This can be done by selecting the according radio button in the **ODF Search Plugin**.

IMPORTANT

If documentation shall be found, it is recommended to search for contents rather than for titles.

9.1.3 Displaying Procedure Properties

To display the properties of a procedure, right-click onto its name. A small dialog will open and display the properties of the selected procedure.

The following properties can be viewed:

- **Unique ID**

  A unique identifier for the procedure.

- **Date**

  The date the procedure was created.

- **Procedure code**

  The Procedure code is a special value which contains information about the procedures purpose and its state of development.

- **Format**

  This property indicates of which format the procedure is. There are three possible procedure formats:

  - Logic Flow
  - Check List
  - PDF Procedure

- **Version**

  A version number.

- **Library**

  The Library in which this procedure is related to.

9.2 Procedure Executor

The **Procedure Executor** displays the content of the selected procedure and provides functionality to perform it. Depending on the type of procedure which is opened it looks different and contains different functionality.

There are currently three types of procedures which can be executed. Each type leads to a different kind of work flow.

9.2.1 Logic Flow Procedures

These type of procedure is designed for work flows which are not linear and contain many decisions. As every decision leads to two or more exits there are many paths which can be followed while the procedure is executed. This type of procedure is best described in a graphical way using symbols for transitions and decisions.

The **Procedure Executor** displays **Logic Flow Procedure**s in a subdivided frame, containing the following two panels:

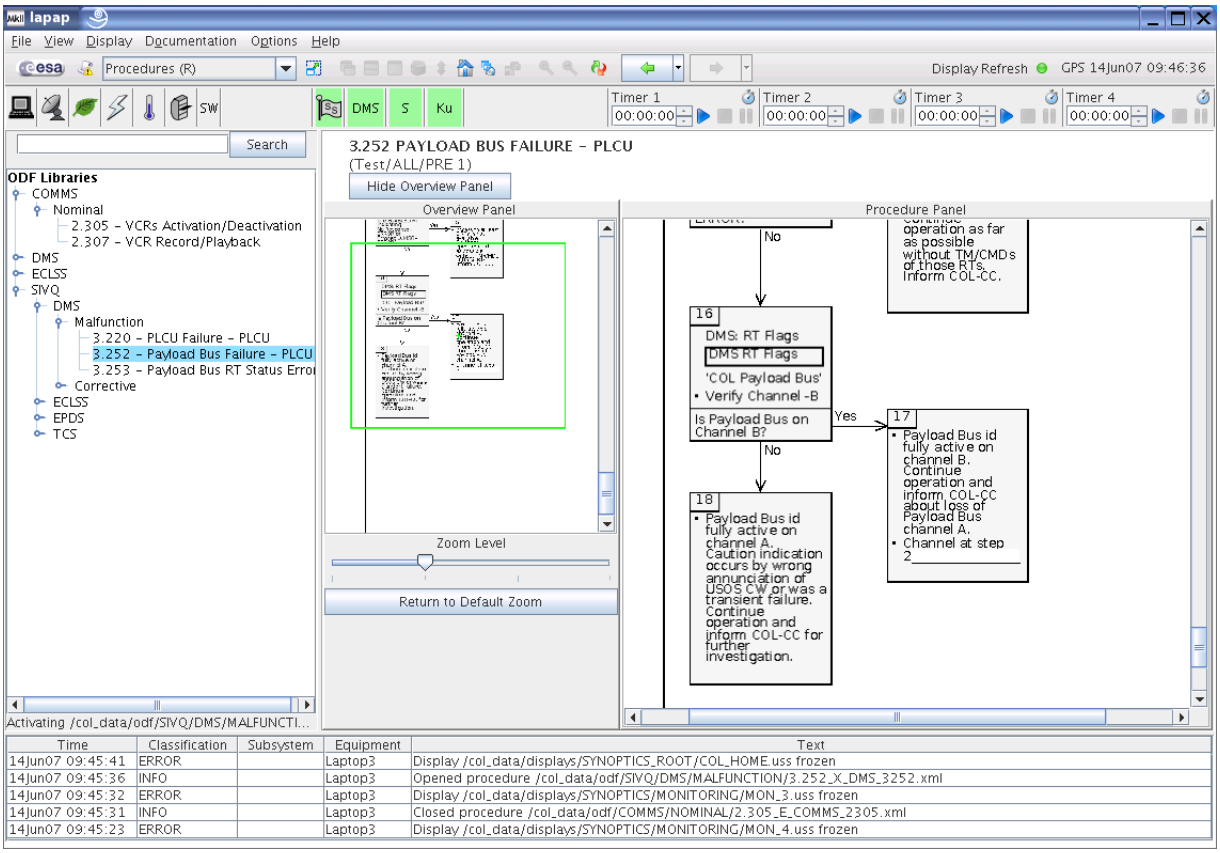
- **Overview Panel**

  The **Overview Panel** (on the left) provides an overall view of the whole procedure and can be used as a navigation help to keep in mind which part of the procedure is currently displayed in the **Procedure Panel**. The currently displayed section is shown as a green rectangle in the **Overview Panel**.

  A slider can be used to change the zoom level of the procedure displayed in the **Procedure Panel**. To enlarge the procedure, move the slider to the right. To get a more distant view, move it to the left. The Button **Return to Default Zoom** sets the zoom level to its default value which is chosen to show as much as possible of the procedure but to keep the procedure readable.

- **Procedure Panel**

  In this panel the procedure is displayed in the selected zoom level. This panel provides functionality to actually work with the procedure currently opened.



A Logic Flow Procedure in the Procedure Executor

9.2.1.1 Working With Logic Flow Procedures

9.2.1.1.1 Elements in Logic Flow Procedures A **Logic Flow Procedure** consists of specific elements which provide different functionalities.

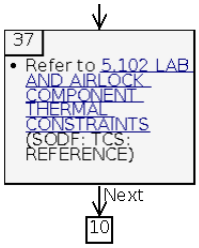
- **Instruction Blocks**

  Each **Logical Flow Procedure** is separated into **Instruction Block**s. There are different types of **Instruction Blocks**:

  - **Action Blocks**

    Action Blocks contain a number of procedural steps the user has to perform manually on the equipment or a **Synoptic Display**. An **Action Block** contains procedural steps which are related to one specific display or equipment.

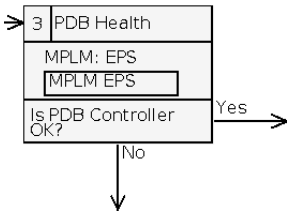
    The single steps can be identified by little black dot in front of them which is called "bullet".



Action Block Containing a Single Procedural Step

– **Decision Blocks**

Decision Blocks contain one or more procedural steps that require a decision. Therefore a **Decision Block** has two or more exits. Depending on the result of the decision the user has to follow the according exit.

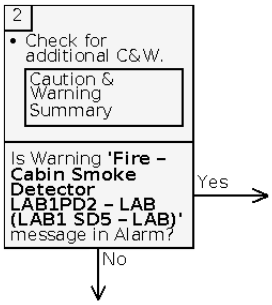


Decision Block With Two Exits

– **Combined Action / Decision Blocks**

In some cases some procedural steps and a following decision belong together and should be grouped into a single element to make their relationship clear.

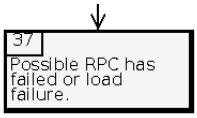
The **Combined Action / Decision Block** is such an element combining the two types of **Instruction Blocks**.



Combined Action / Decision Block

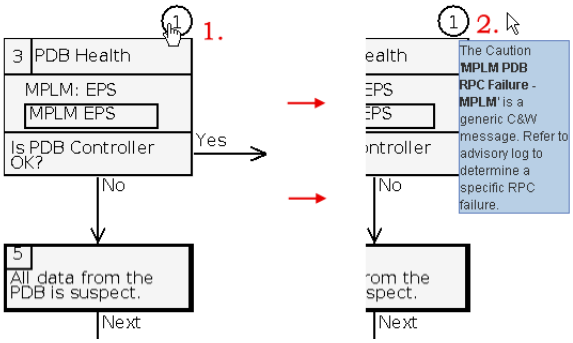
– **Result Blocks**

Result Blocks contain a short summary which describes the progress the performing of the procedure has reached at a certain moment of time. No action or decision has to be performed.



- **Notes**

These small icons provide information about the current step / The whole procedure. To display the information (or to hide it), click onto the icon.



Opening a Note of a Instruction Block

- **Step Exits**

  Step Exits do not just only show to which step they lead, they also contain interactivity. A click onto the description of an exit will select the according next **Instruction Block**.

9.2.1.1.2 Basic Navigation The **Overview Panel** contains a small overview image of the procedure and displays a green rectangle representing the current view port of the **Procedure Panel**. While the scrollbars in the **Procedure Panel** are moved, this rectangle moves simultaneously to show the changed visible region.

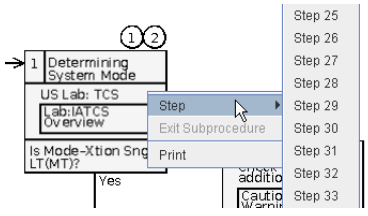
Another more direct way to navigate within the procedure is to click into the **Overview Panel** (using any mouse button). This will center the visible region on the position of the mouse click. It is also possible to drag the view to the desired position.

9.2.1.1.3 Executing The Logic Flow Procedures The execution of a **Logic Flow Procedure** has to start with the first available **Instruction Block**, numbered **1**. If additional notes are available, read them first.

To select a certain **Instruction Block** in the procedure, right-click anywhere in the **Procedure Panel**. This will open a context menu displaying the available **Instruction Block**s.

IMPORTANT

Instruction Blocks are called "steps" in the **Procedure Panel**, deviating from the ODF Standards. Be careful not to confound them with the "procedural steps" inside an **Instruction Block**



Procedure Panel - Context Menu

After selecting an **Instruction Block** from the context menu, the procedure will be scrolled to make it visible. The selected Block will change its color to light green.

After performing the manual tasks, the next Block can be selected. There are two ways to do this:

1. Clicking onto the description of the exit

   This way is the most save way, because the step which has to follow according to the work flow of the procedure will be selected.

2. Selecting the following step from the context menu.

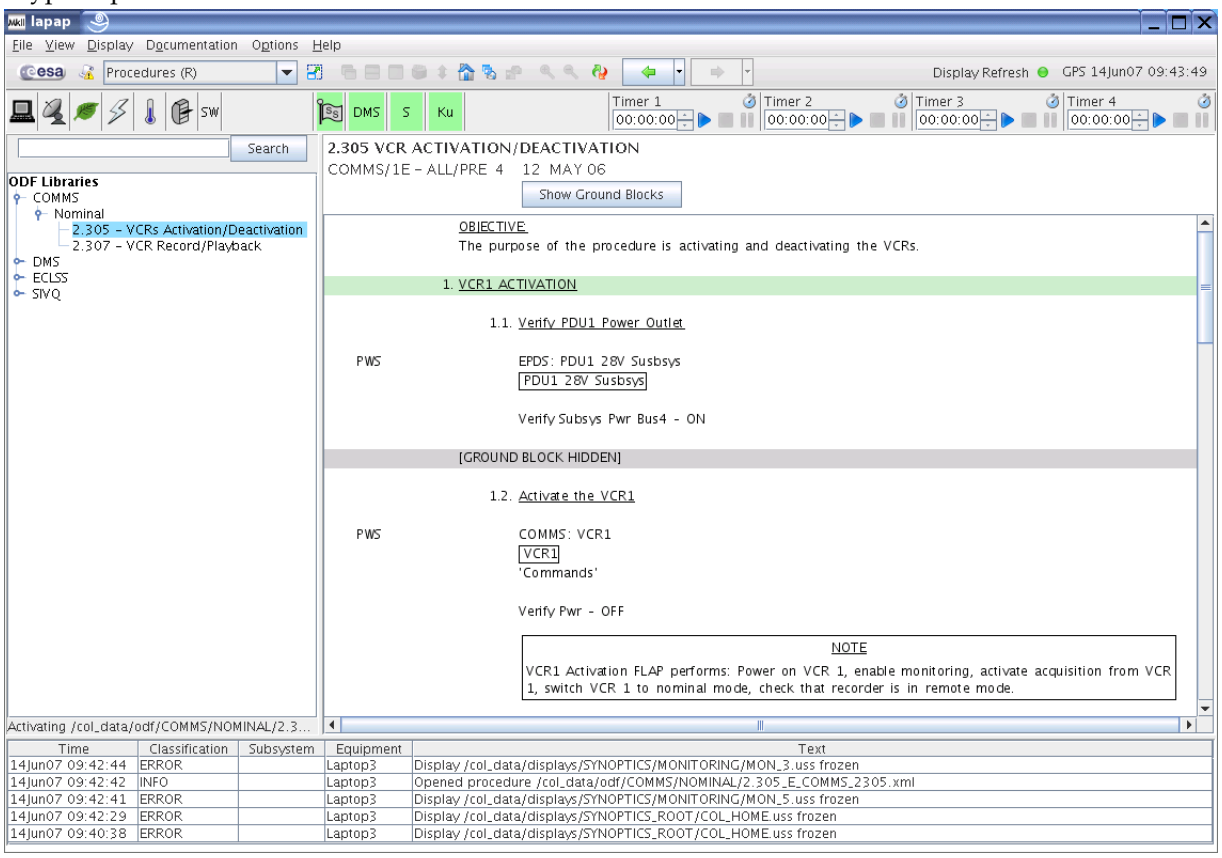
   Using the context menu to select the following step is also possible but should be used carefully as it is possible to select a wrong step accidentally.

IMPORTANT

To ensure a proper work flow of the procedure it is recommended to use method 1. rather than the context menu.

9.2.2 Check List Procedures

Check lists are procedures which have a linear flow. The actions are lined up followed one by another and there are no (or very few) decisions which lead to a different path the procedure is walked through. This type of procedure is described best with a checklist.



A Check List Procedure In The Procedure Executor

9.2.2.1 Working With Check List Procedure

Check List Procedures are executed in a different way. At first, a checklist contains parameters which have to be set before starting work. These parameters change the **Check List Procedure** depending on the circumstances in which it should be executed (i.e. a procedure could be used to configure a certain part of the equipment, but be applicable for more than one component. In this case the parameters could be used to select the desired equipment).

While executing a **Check List Procedure** the user performs the manual tasks described in the procedural sub steps of each step, one after another. The first step should be selected using the context menu and selecting the first step from the sub menu **Step**. The following single tasks are selected with the keyboard's arrow keys.

There are a few situations where the **Check List Procedure**s might contain a decision and therefore more than one path to follow. These jumps are realized using **Step References**, which are links within the procedures text. A mouse click on these elements selects the according step of the procedure.

Another type of "link" are **Procedure Departures**. If a procedure requires the execution of another procedure (i.e. for initialization purposes) it will contain such a link to another procedure.

Check List Procedures may require the recording of specific data. This technique is called **Data Recording** and makes it possible to enter the data directly into the procedure.
A detailed description of this features can be found in the next section.

9.2.2.1.1 Elements In Checklist Procedures

- **Show Ground Blocks** Button

  This button will hide / show all procedure steps that are related to ground operations.

- **Hide Parameters** Button

  This button will hide / show the **Parameter Selection**.

  Parameter Selection

  Before the execution of a **Check List Procedure** the user should specify its parameters. This means he has to select the correct parameter using one of the radio buttons below the title of the procedure.

  Depending on which parameter is selected, the procedure will be changed. That does not mean that the instructions or the work flow will change. The parameters have influence on certain descriptions or labels.

Check List Procedure - Parameter Selection

- **Instructions**

  Instructions are procedural steps which are textually described and have to be performed manually by the user on the according equipment. **Instructions** can be selected by using the arrow keys but contain no other functionality.

A Selected Instruction

- **Procedure Departure**

  In some cases the execution of another procedure may be necessary or desired. In this case a **Check List Procedure** may contain a link to another procedure. These links are called **Procedure Departures**. Clicking onto a **Procedure Departure** will immediately open the referenced procedure.

> IMPORTANT
>
> Read the instruction besides the **Procedure Departure** carefully as it may contain information about the step at which the current procedure has to be resumed after finishing the referenced one.

A Procedure Departure

- **Step References**

  Although **Check List Procedure**s have a linear work flow there may be some cases where a step has to be left undone and resuming at a later point in the procedure is necessary. Those non linear jumps in the work flow are realized by **Step References**. These references look similar to the **Procedure Departure**s.

A Step Reference

- **User Input Fields**

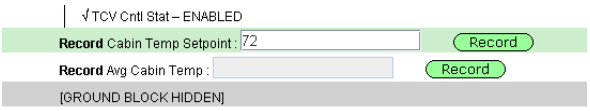
  There are certain procedures that ask the user to record some data. This can be done directly in the **Procedure Executor** using **User Input Fields**.

The **User Input Field** has to be selected to enable user input. After the user has entered the data he has to press the **Record** button to make the procedure store the entered data. After pressing the **Record** button it turns gray and changes its caption to **Recorded**.

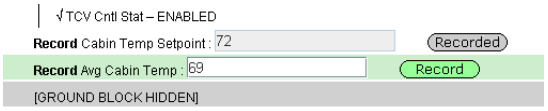
IMPORTANT

It is possible to select following steps after entering user data without pressing the **Record** button. The entered data will remain within the **User Input Field** but it will be lost if another procedure is opened or the application is closed.

It is possible to re-enter data after pressing the **Record** button. If the user has accidentally entered wrong data and pressed the **Record** button he may simply re-enter the correct data. The **Recorded** button will change back into the **Record** button as the input changes.



Data Recording In User Input Fields

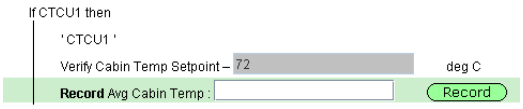


User Input Field After Recording a Value

- **User Display Fields**

  The previously entered values may appear in the procedure at some later point. These areas are called **User Display Fields**.

  User Display Fields are read only and just for verification.



User Display Field

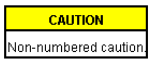
- **Clarifying Information**

  Among a procedure important issues are shown in special sections called **Clarifying Information**. These blocks are non functional but can be selected. Read this blocks carefully as they contain important information. There are three different types of Clarifying Information:

  – Warning Blocks

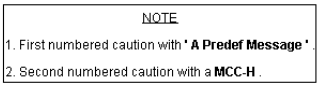
Warning Block

  – Caution Blocks



Caution Block

  – Note Blocks



Note Block

9.2.2.1.2 Executing Check List Procedures The procedural steps of a **Check List Procedure** have to be executed one after another and there are no (or only a few) decisions that lead to different paths. Because of that the work flow is different from the one used in **Logic Flow Procedures**.

Check List Procedures are divided into a number of steps, which can be selected from the context menu. Each of this step contains selectable tasks, which can be selected by typing the arrow keys on the keyboard.

IMPORTANT

Only the main steps of each **Check List Procedure** can be selected by context menu. To select the sub steps within each step the arrow keys have to be used.

The selected sub step is displayed with a light green background. It contains the manual steps the user has to perform, and can range about a single or more lines.

9.2.3 PDF Procedures

PDF Procedures are procedures which are in the Adobe Acrobat PDF file format. To display a **PDF Procedure** the Adobe Acrobat Reader will be opened as a **Plugin** within lapap. It is not necessary to open the procedure externally.

PDF Procedures can be either **Check List Procedure**s or **Logic Flow Procedure**s.

Procedures of this type can only be viewed and executed manually. None of the functionality described above applies to **PDF Procedure**s. Instead the functionality of the Adobe Acrobat Reader can be used (to print the procedure or to search for certain terms).

9.2.4 General Procedure Work Flow

There are some things that **Check List Procedure**s and **Logic Flow Procedure**s have in common:

- **Interrupting The Execution**

  If a procedure has been executed until a certain step, and the user has to interrupt the execution, it is possible to stop the work and continue later. The work on the procedure may simply be stopped (by selecting another procedure, by closing the application or by choosing a different workspace). If the same procedure is opened the next time, a dialog box will ask the user if he wants to continue the execution of the procedure. If he chooses **Yes**, the procedure will be opened and scrolled to the position it had been stopped at. All values the user has entered into **User Input Field**s will be restored and the last step will be reselected.

  If the procedure should be restarted completely, the user has to select **No** from the dialog box.

- **Procedure Context Menu**

  The context menu of procedures contains the same element for both types of procedures.

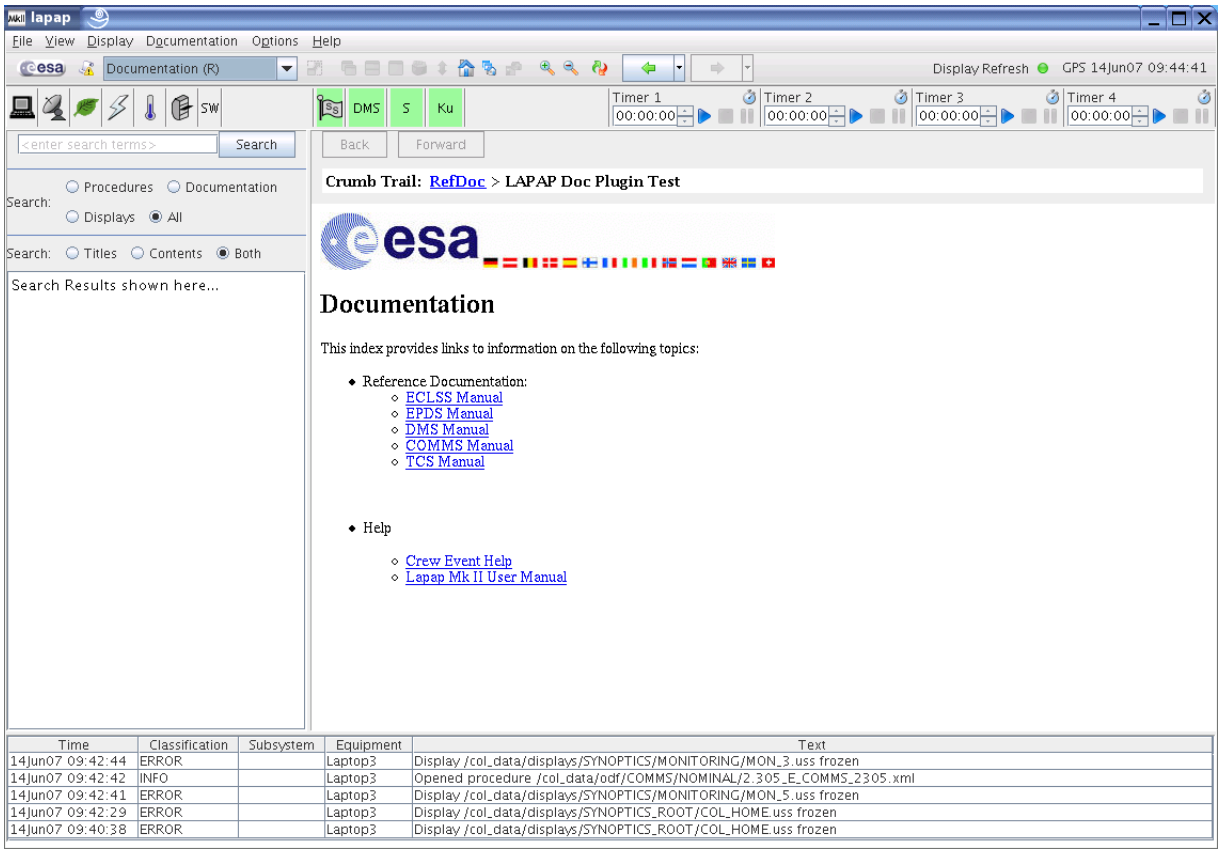
- **Printing Procedures**

  It is possible to print the currently opened procedure by selecting **Print** from the context menu. This will open the procedure as an external Adobe Acrobat Reader document (PDF). After this, the procedure may be printed using the Adobe Acrobat Reader.

9.3 Documentation Viewer

The **Documentation Viewer** may be used to view Documentation about procedures or general information concerning Columbus.

To open the **Documentation Viewer**, select the workspace **Documentation**. This will open the **Documentation Viewer** and load the documentations start page.



Documentation Viewer (Start Page)

The **Documentation Viewer** contains the following elements:

- **Navigation Buttons**

  At the top of the **Workspace** are two navigation buttons labeled **Back** and **Forward**. These buttons work similar to the navigation buttons of an Internet browser. They navigate back and forward through the document history of the **Documentation Viewer**.

- **Crumb Trail**

  The crumb trail below the navigation buttons displays the user's position within the hierarchical structure of the documentation. The single elements can be considered as branches within the tree structure of the documentation and can be clicked to open the corresponding page.

- **Documentation View**

  The main area of the documentation Workspace shows the currently loaded page.

The documentation pages are of the format HTML or PDF. If a PDF documentation page is selected, the Adobe Acrobat Reader will be opened embedded in the **Documentation Viewer**.

The text size of HTML documentation can be changed by using the toolbar buttons or according menu elements.

9.3.1 Searching For Documentation

The contents of the documentation can be searched using the **ODF Search Plugin.** For detailed information on how to use the ODF Search Plugin, see Section 9.1.2.

Appendix A

Keyboard Shortcuts and Hot Keys

Table A.1: Lapap Mk II Application and Desktop Hot Keys

Alt + F3	Activate window menu
Alt + F4	Close active window
Alt + F7	Move active window
Alt + F8	Resize active window
Alt + F9	Minimize active window
Alt + F10	Maximize active window
Alt + Tab	Activate next window
Alt + Shift + Tab	Activate previous window
Alt + F1	Popup launch menu
Alt + F5	Show window list
Alt + F12	Mouse emulation using $\rightarrow$, $\leftarrow$, $\downarrow$ and $\uparrow$
Alt + Print	Window screenshot
Ctrl + Print	Desktop screenshot
Ctrl + Alt + Delete	Logout
Ctrl + Escape	Show task manager
Ctrl + Alt + V	Show Klipper popup-menu
Ctrl + Alt + R	Manually invoke action on current clipboard
Ctrl + Alt + X	Enable/Disable clipboard actions
Ctrl + Alt + D	Toggle desktop
F1	User Manual
F2	Onboard Documentation
Ctrl + 1	Switch to Workspace "Synoptics"
Ctrl + 2	Switch to Workspace "Synoptics + Procedures"
Ctrl + 3	Switch to Workspace "Procedures"
Ctrl + 4	Switch to Workspace "CLSW Status"
Ctrl + 5	Switch to Workspace "Documentation"
F10	Activate application menu
F12	Columbus Home Page
Tab	Focus next component
Shift + Tab	Focus previous component
Enter	Perform dialog default action (normally Accept / OK / Open...)
Space	Activate selected element
Esc	Dismiss dialog or cancel selection

Table A.1: (continued)

Alt + <alphanum.>	Activate item according to mnemonics (e.g. open menu according to underlined character)
→	Transfer selection to next horizontal component or scroll contents right
←	Transfer selection to previous horizontal component or scroll contents left
↓	Transfer selection to next vertical component or scroll contents down
↑	Transfer selection to previous vertical component or scroll contents up
Home	Transfer selection to first component
End	Transfer selection to last component
Ctrl + W	Close synoptic display
Ctrl + F4	Close synoptic display
Ctrl + U	Undock synoptic display
Ctrl + D	Dock synoptic display
Ctrl + F	Find text as you type
Ctrl + Shift + F	Find parameter in displays
Ctrl + ↑	Transfer selection to next section in checklist procedure
Ctrl + ↓	Transfer selection to previous section in checklist procedure
Y / y	'Yes' in logic flow procedure
N / n	'No' in logic flow procedure
X / x	'Next' in logic flow procedure
Ctrl + Backspace	Undo last decision in logic flow procedure

Appendix B

Known Problems

- "Time synchronization occured" event messages (SPR-20091)

  The cause for this message is generally a detected offset between the laptop local clock and the DMS provided station time. Usually the PWS laptop is synchronized to the DMS provided time regularly as long as it is connected to the LAN. In case the laptop is not connected to the LAN for a certain period but still running the laptop local clock may drift from the stable GPS time due to the inaccuracy of the laptop hardware. The same can happen if a process on the laptop blocks other tasks. In such situations the detected difference will result in the described message.

  There are two situations where the message is raised although no time adjustment has been performed: Lapap start-up and shutdown.

- Using the CLSW Web Interface (SPR-20116)

  The built-in web interface to the Columbus LAN Switch does not integrate smoothly. Especially in case new windows are opened interaction may be corrupted. E.g. when acknowledging CLSW events in the web interface a new window is opened with confirmation buttons. If in such situations the expected action is not performed a simple repetition of the required steps is adviced. Please note, that the steps may need to be repeated more than once.

- Hot Keys in the CLSW Web Interface (SPR-20683)

  In the "CLSW Status" workspace the Lapap Mk II hot keys will not be available as long as the CLSW web interface has the input focus. Clicking with the mouse into the application's toolbar or status bar or switching into another workspace using the mouse will recover hot key functionality again.

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