



## 16 K-Chief 700

16.02.02 System Overview Maintenance

**Ref:**

**Document name:** Kongsberg K-Chief 700 Product Description

**Document nr:** 304844/B

**Document name:** Kongsberg K-Chief 700 Operator Manual (rel. 8.2)

**Document nr:** 332618/A

**Document name:** AIM 8.3 User Guide

**Document nr:**

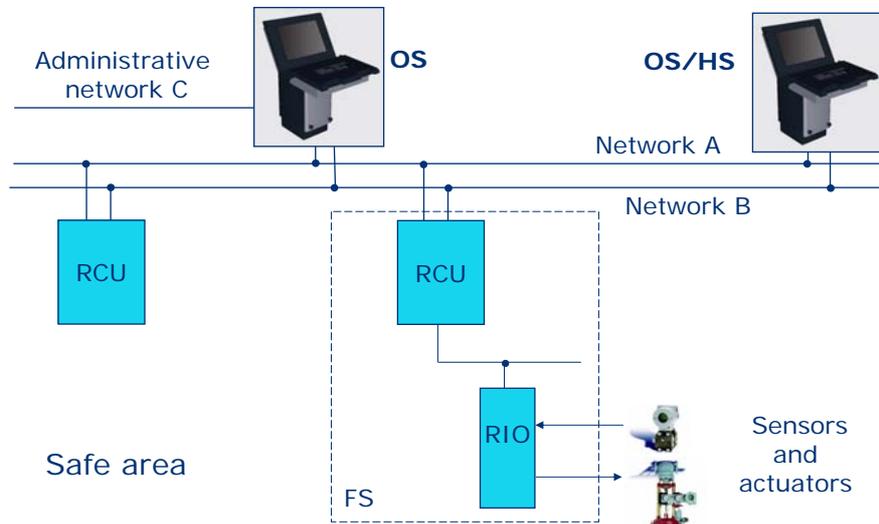
**DMS no:** xxxxxxxxxxxxxx

## Objectives



- Be familiar with the naming and abbreviations of the automation control system
- To obtain knowledge about the different hardware units in the system and how they are connected
- To learn how to monitor the status of the hardware units by using System Status image and Station Explorer view on the operator station
- Repetition of some tools from basic course

## AIM 2000 hardware components



## Operator station



Main interface between the operator and the process

*Monitor*

The operators "eye" into the process

*Panels*

Specific panels for simplified operator communication

*MP7900 computer*

## OS Panels



BU-AUT Panel



ALC Panel

Input Panel



## Field Station

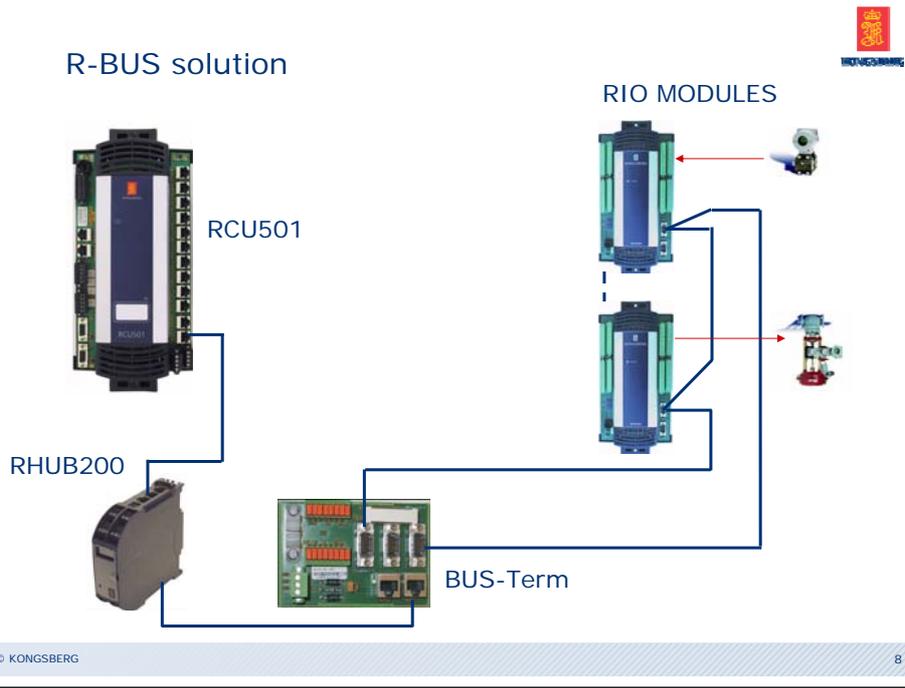


Interface between the control system and the physical equipment

- RCU
- RIO units



## R-BUS solution



## Process Station

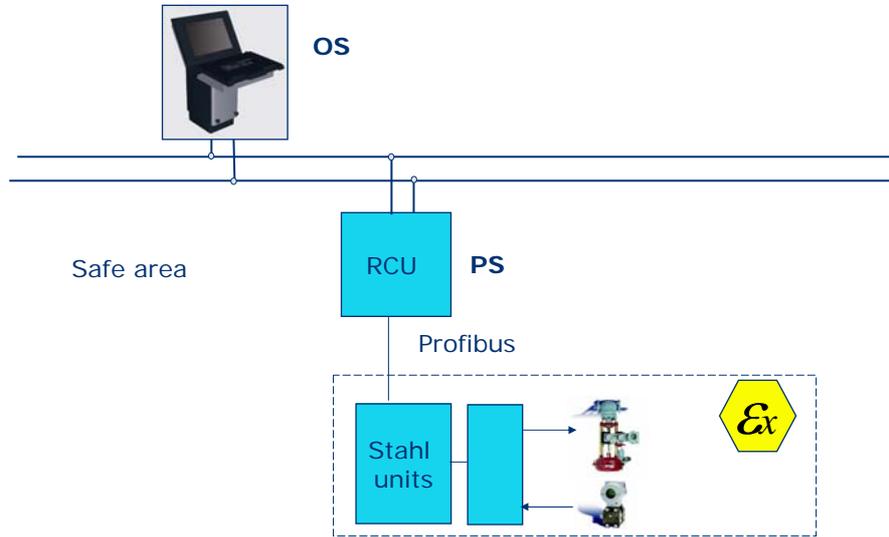


Remote Controller Unit (RCU) is a real-time single board computer and remote IO bus driver

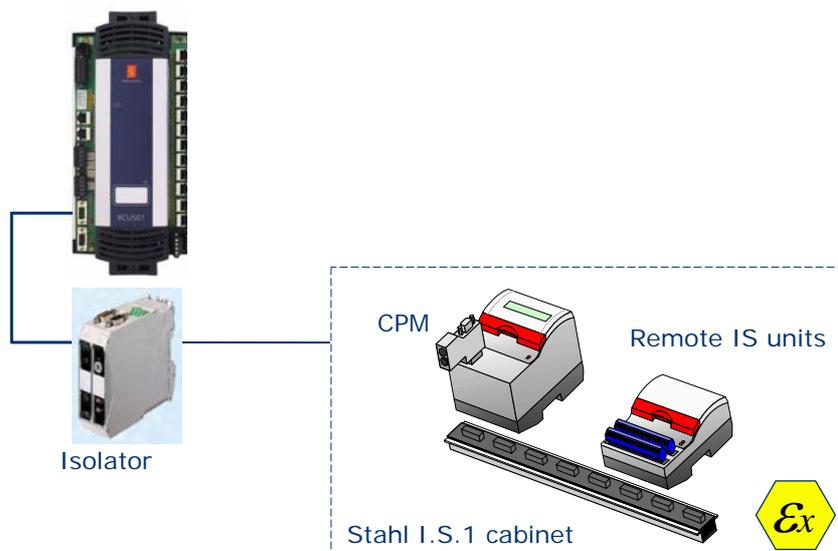
RCU 501 is based on PowerPC Host Processor MPC 8245 running at 400MHz

64 MB RAM, 16 MB Flash memory

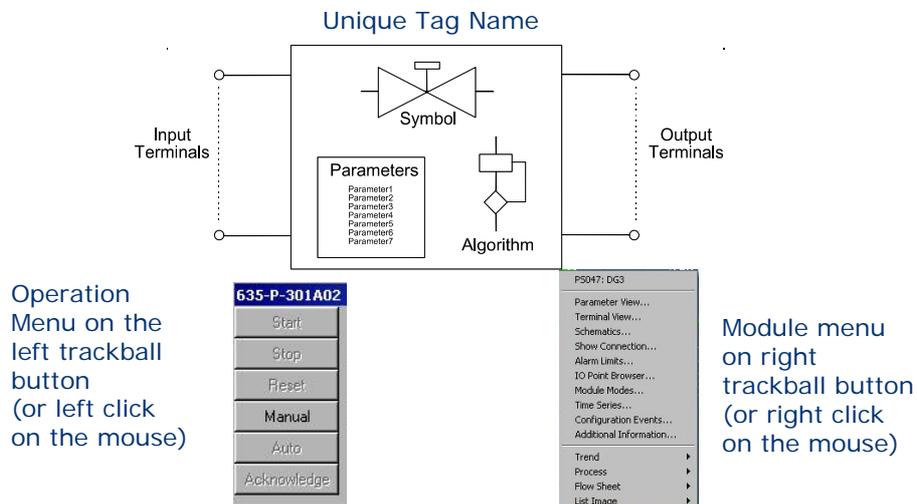
## Stahl RIO solution



## Profibus/Stahl solution



## Function Module: Main Parts



## Navigation in K-Chief 700



The screenshot shows the K-Chief 700 software interface. The title bar reads 'AIM-OS - OS050 - Kongsberg - Course' and 'Exhaust Gas System'. The menu bar includes File, Edit, View, Module, Operation, Tools, System, Panel, and Help. The toolbar contains six navigation buttons: Home, Back, Forward, Stop, Refresh, and Print. The 'Image Navigator' window is open, displaying a tree view of the system components:

- MAIN PAGE
- Ballast Main
- Ridge Main
- Diesel Generator Main
- Drill Water System
- Exhaust Gas System
- Fire Main 1
- FD Bunker Transfer
- Fw Cooling System
- HPU
- HVAC System Main
- LO System Engine Room 1 and 2
- Power
- Potable Water System
- Propulsion
- Starting Air Pressure Engine Room 1 and 2
- Steam Condensate Feedwater
- SW Cooling System
- SW Service System
- Water Tight Doors

- Six buttons for easy navigation in the toolbar
- Use the navigator to go to different images in the system

## Navigation Using the Module Context Menu



- From Module
- Using Find Tag

The screenshot illustrates the navigation process for a specific tag. A context menu is shown for the tag 'PS038: MIC-111101', with options such as 'Process', 'Flow Sheet', 'List Image', and 'Safety'. The 'Process' option is highlighted, leading to a sub-menu with 'Ballast Main' and 'Ballast Misc'. A 'Find Tag' dialog box is also present, showing search criteria and a list of tags.

## Alarms



PrimaryWindowPopup - Event List

	Time	Tag	Terminal	Description	Failure	Original	Type	CmdG	State	Limit	Memb
*	10:09:00 26/10	LOADCALC_ALA	Meas1	Load Calculator alive Count	Alarm State	Misc1	Proces	Ballas	DigAl		A
*	10:06:08 26/10	LCAH-081102	Meas2	FWD AUX MACH RM BILGE	Alarm state	Misc2	Proces	Bilge	DigAl		A
*	10:06:08 26/10	LCAH-081101	Meas2	FWD AUX MACH RM BILGE	Alarm state	Misc2	Proces	Bilge	DigAl		A
*	10:05:47 26/10	LCAH-081117	Meas2	CENT EIR BILGE WELLS P-	Alarm state	PrmsCa	Proces	Bilge	DigAl		A B
*	10:05:01 26/10	Asafe			COMMUNICATION FAULT	F&G-F0	System		DigAl		
*	10:04:49 26/10	Asafe			COMMUNICATION FAULT	F&G-F0	System		DigAl		
*	10:04:35 26/10	Jl-032166	IOErr	AFT Fire Pump (P) Power	IO Error	F&G-F0	Proces	Fire&	DigAl		A
*	10:04:35 26/10	IAH-032165	IOErr	AFT Fire Pump (P) Current	IO Error	F&G-F0	Proces	Fire&	DigAl		A
*	10:04:35 26/10	IAH-081216	IOErr	FWD No.1 Fire Jockey Pp C	IO Error	F&G-F0	Proces	Fire&	DigAl		A
*	10:04:35 26/10	IAH-081217	IOErr	FWD No.2 Fire Jockey Pp C	IO Error	F&G-F0	Proces	Fire&	DigAl		A
*	10:04:33 26/10	Jl-032166	ProMeas	Located in FS49	RIO: Open loop/Cable break	F&G-F0	System		DigAl		A

Dynamic Alarm Page | Static Alarm Page | Historic Event Page | Dynamic Event Page

For Help, press F1

### Dynamic Alarm Page

- \* indicates an unacknowledged alarm
- Use TBI for quick navigation to Process Image

## Alarm Settings



To configure alarms: open Alarm limits from the Module Context Menu

Limits	Active	Priority	Limit	Deadband	Alarm text	WC group
Scale High:	<input checked="" type="checkbox"/>	LDW	203			5
HighHigh:	<input type="checkbox"/>			0		0
High:	<input checked="" type="checkbox"/>	LDW	140	0		5
Low:	<input type="checkbox"/>			0		0
LowLow:	<input type="checkbox"/>			0		0
Scale Low:	<input checked="" type="checkbox"/>	LDW	-5			5

## Configuration Events



Originator	Time	User	Inhibitor	Command Group	Description
PS031	26.10.2011 09:1...		PS031		PS031: Started version 166.67
PS032	26.10.2011 09:1...		PS032		PS032: Started version 166.65
PS033	26.10.2011 09:1...		PS033		PS033: Started version 162.59
PS034	26.10.2011 09:1...		PS034		PS034: Started version 186.57
PS035	26.10.2011 09:1...		PS035		PS035: Started version 183.59
PS036	26.10.2011 09:1...		PS036		PS036: Started version 182.63
PS037	26.10.2011 09:1...		PS037		PS037: Started version 331.157
PS038	26.10.2011 09:2...		PS038		PS038: Storing succeeded version 318.163
PS038	26.10.2011 09:2...	Course	OS033	Ballast	ME-111101: Disable Input mode changed On -> Off
PS038	26.10.2011 09:2...	Course	OS033	Ballast	ME-111101: Disable Input mode changed Off -> On
PS038	26.10.2011 09:2...	Operator	OS033	Ballast	ME-111101: OutFailure: Alarm changed Priority UNPRI -> HIGH
PS038	26.10.2011 09:2...	Operator	OS033	Ballast	ME-111101: OutFailure: Alarm changed Priority LOW -> UNPRI
PS038	26.10.2011 09:1...		PS038		PS038: Started version 318.162
PS039	26.10.2011 09:1...		PS039		PS039: Started version 306.159
PS040	26.10.2011 09:1...		PS040		PS040: Started version 301.167
PS041	26.10.2011 09:1...		PS041		PS041: Started version 316.157
PS042	26.10.2011 09:1...		PS042		PS042: Started version 313.152
PS043	26.10.2011 09:3...		OS033	Ballast	PE-111502: Disable Output mode changed Off -> On
PS043	26.10.2011 09:3...		OS033	Ballast	PE-111502(Meas1)High: Alarm changed Disabled -> Enabled
PS043	26.10.2011 09:3...		OS033	Ballast	PE-111502(Meas1)High: Alarm changed Priority UNPRI -> LOW
PS043	26.10.2011 09:3...		OS033	Ballast	PE-111502(Meas1)High: Alarm changed Limit 0 -> 4
PS043	26.10.2011 09:2...		PS043		PS043: Started version 241.81
PS043	26.10.2011 09:2...	Course	OS033	Ballast	PE-111102(Meas1)High: Alarm changed Priority UNPRI -> LOW
PS043	26.10.2011 09:2...	Course	OS033	Ballast	PE-111102(Meas1)High: Alarm changed Limit 0 -> 4

- Open Configuration Events from Tools
  - Green; saved changes
  - Blue; not saved changes
  - Red; lost changes
  - Black; information

# System Status

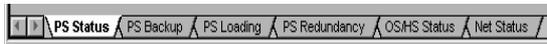


Toolbar:



Station	Status	Exceptional Modes	Spare Time	Net State	I/O Errors	I/O Status	Serial Errors	Serial Status	Other Errors	Other Status	Free Memory	Uptime	Started	Last Reported	Version
PCU031	Operational	SA+AI	0	OK	8	ERROR				OK	0	2.04 h	24/10/06 01:09:39	24/10/06 03:12:34	33.68
PCU032	Operational	SA+AI	0	OK	9	ERROR				OK	0	2.02 h	24/10/06 01:09:42	24/10/06 03:12:28	35.61
PCU041	Operational	SA+AI	0	OK	9	ERROR				OK	0	2.04 h	24/10/06 01:09:51	24/10/06 03:12:26	43.98
PCU042	Operational	SA+AI	0	OK	9	ERROR				OK	0	2.02 h	24/10/06 01:09:54	24/10/06 03:12:30	30.87
PCU043	Operational	SA+AI	0	OK	1	ERROR				OK	0	2.02 h	24/10/06 01:09:57	24/10/06 03:12:33	25.56
PCU044	Operational	SA+AI	0	OK	1	ERROR				OK	0	2.02 h	24/10/06 01:10:00	24/10/06 03:12:26	24.57
PCU045	Operational	SA+AI	0	OK	1	ERROR				OK	0	2.02 h	24/10/06 01:10:03	24/10/06 03:12:29	29.59
PCU046	Operational	SA+AI	0	OK	1	ERROR				OK	0	2.02 h	24/10/06 01:10:06	24/10/06 03:12:32	30.63
PCU051	Operational	SA+AI	0	OK	2	ERROR				OK	0	2.02 h	24/10/06 01:10:12	24/10/06 03:12:28	84.91
PCU052	Operational	SA+AI	0	OK	2	ERROR				OK	0	2.02 h	24/10/06 01:10:16	24/10/06 03:12:32	85.92
PCU053	Operational	SA+AI	0	OK	3	ERROR				OK	0	2.02 h	24/10/06 01:10:18	24/10/06 03:12:33	71.89
PCU131	Not Reported														
PCU132	Not Reported														
PCU141	Not Reported														

Coloured cells indicate errors

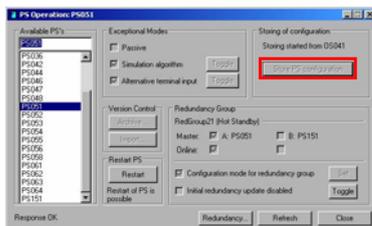


Additional pages can be chosen by tabs

# System Status - PS Backup



Station	Backup Time	Elapsed Backup Time	Number Of Backup Servers	Backup Server List	Backup Progress	Backup Status	Version
PS031	19/10/11 08:53:22	27 s	3	OS031.05034.05097		OK	451.0
PS032	19/10/11 08:53:26	26 s	3	OS031.05034.05097		OK	426.0
PS033	19/10/11 08:53:30	27 s	3	OS031.05034.05097		OK	424.0
PS034	19/10/11 08:53:39	27 s	3	OS031.05034.05097		OK	420.0
PS035	19/10/11 08:54:03	28 s	3	OS031.05034.05097		OK	418.0
PS036	19/10/11 08:54:05	29 s	3	OS031.05034.05097		OK	418.0
PS037	19/10/11 08:54:09	28 s	3	OS031.05034.05097		OK	413.0
PS038	19/10/11 08:54:12	29 s	3	OS031.05034.05097		OK	423.0
PS039	19/10/11 08:54:14	31 s	3	OS031.05034.05097		OK	470.0
PS040	19/10/11 08:54:17	30 s	3	OS031.05034.05097		OK	436.0
PS041	19/10/11 08:54:20	29 s	3	OS031.05034.05097		OK	465.0
PS042	19/10/11 08:54:25	33 s	3	OS031.05034.05097		OK	454.0



Store PS Configuration

- Alarm Changes
- IO Changes

## System Status – Net Status



Receiver	Sampling Station	Msg pr. 100 sec	Last Msg Net A	Last Msg Net B	IP-Address		
OS031	DP-OS001	1	0	0	172.21.101.1		
OS032	DP-OS002	1	0	0	172.21.101.2		
OS033	DP-OS003	1	0	0	172.21.101.3		
OS034	DP-OS004	1	0	0	172.21.101.4		
OS035	DP-OS005	1	0	0	172.21.101.5	Static	Static
OS036	DP-OS006	1	0	0	172.21.101.6		
OS037	DP-OS009	1	0	0	172.21.101.9		
OS038	DP-F3001	1	0	0	172.21.1.1		
OS039	DP-F3004	1	0	0	172.21.1.4		
OS040	DP-F3011	1	0	0	172.21.1.11		
OS043	DP-F3021	51	0	0	172.21.1.21		
OS044	OS001	61	0	0	172.21.101.31		
OS045	OS002	60	0	0	172.21.101.32		
OS097	OS003	81	0	0	172.21.101.33	Static	Static
PS031	OS004	80	0	0	172.21.101.34		
PS032	OS005	80	0	0	172.21.101.35		
PS033	OS006	80	0	0	172.21.101.36		

Use Net Status to locate network problems

Static page – right click to get updated data

- Net A
- Net B
- RedNet

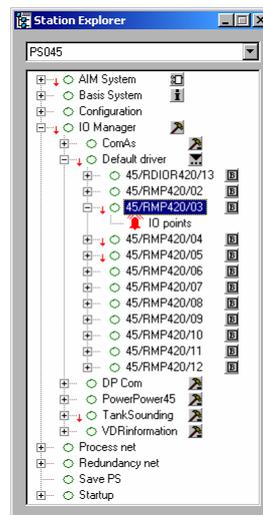
## Station Explorer



To open:

- Tools, Station Explorer
- Right-click in Station Status view on selected PS

- Properties dialog box, for displaying the software and hardware status of the selected PS
- IO Block dialog box, for displaying the information on a selected IO block and its IO points
- Module context menus, for displaying information of the selected module
- IO Manager dialog box, for displaying the status of the IO drivers, IO objects and IO blocks for a selected station
- Driver Properties dialog box, for displaying the configuration of the IO drivers of the system

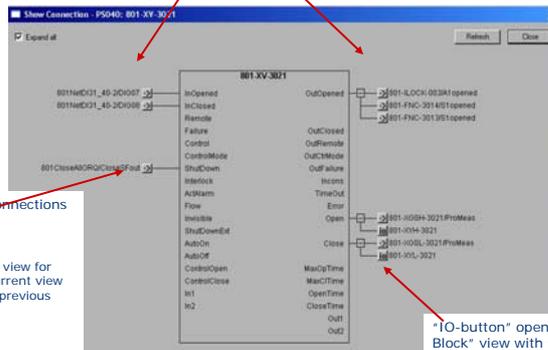


## Show Connections



Tool for following signals through the system;

- shows where values on input terminals are "coming from" and where values on output terminals are "going to"



The "arrow-buttons" indicates connections between modules by `<TagName>/<TerminalName>`

On selection the "Show Connection" view for connected module (Tag) replaces current view with highlighted Tag/Terminal from previous view.

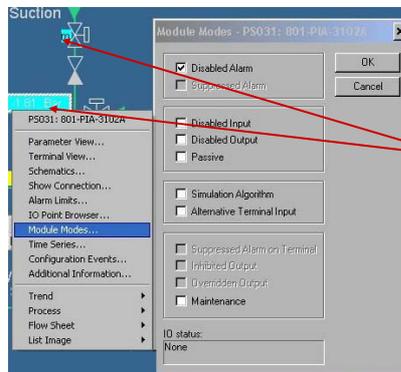
"IO-button" opens the "IO-Terminal Block" view with selected IO-point highlighted

Module menu available on right click

## Module Modes: Exceptional Modes



Selected from module menu



The user may set the function module in some exceptional operational modes;

- Turn off alarm reporting from the module.

- Set the module passive; none of the modules functions will be executed, all data/values is "frozen".

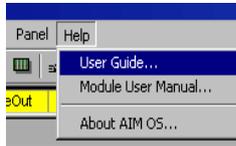
The exceptional modes are indicated by background colouring the tag mark or the numeric measurement presentation

The colour convention for module mode are usually:

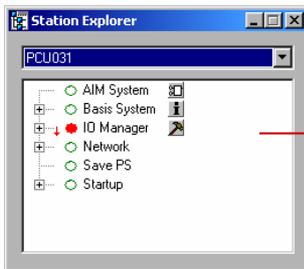
- Disabled alarm (By Operator)
- Suppressed Alarm (By Logic)
- Passive Module
- Input/Output terminal Disabled

## User Guide (Help)

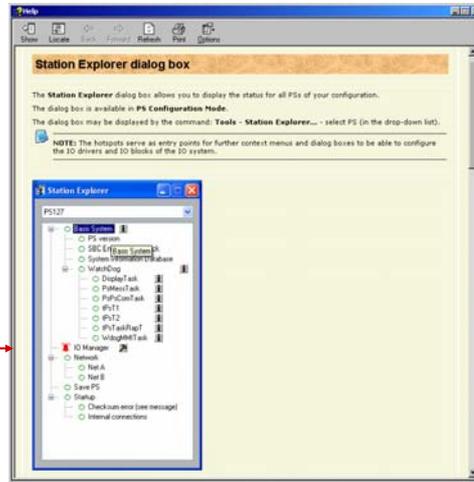
Open the complete User Guide



Select the window, press F1 and a dialog box with reference information is displayed



F1



## Exercises

- System Status
- Station Explorer
- Operation Repetition

## Summary



- System Topology
- System Status
- Station Explorer
- I/O
- Tools