

## Images and Function modules

### References

- Kongsberg K-Chief 700 Integrated Control System Product Description, 304844/B
- Kongsberg K-Chief 700 Operator Manual, 332618/B
- Online User Guide
- Vessel specific KFDD Common/General system



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# Content

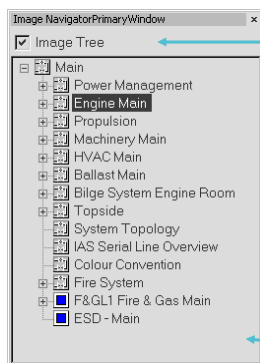
- Navigation in the K-Chief 700 system
- Function module concept
- Tag marks
- Operation menu
- Context menu
- Parameter view
- Terminal view
- Different Images types



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## How to Navigate in K-Chief 700 system (Choose Process Images)

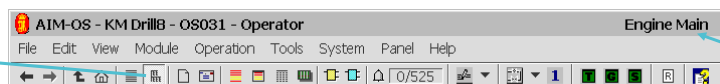
The Navigator shows Process Images in an Image Tree



Deselect Image Tree for all views in alphabetic order



BU-AUT: Labeled buttons for opening e.g. Ballast view



The name of the selected view



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## Icons on the toolbar concerning Navigation



Navigator



Home Image or MAIN PAGE



History navigator: Log of the most recent images displayed on the OS



Parent image

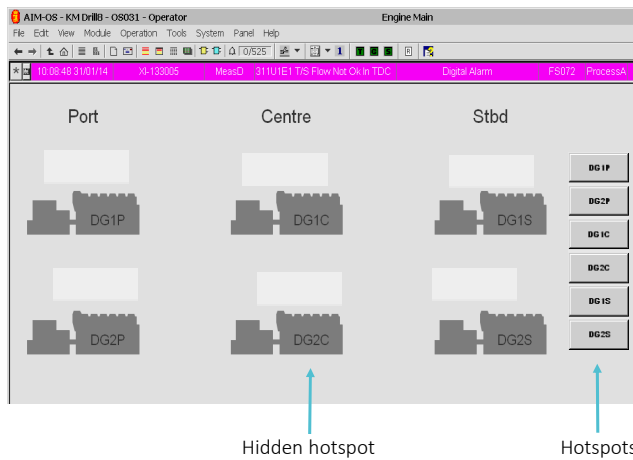



Previous and Next arrows: As listed in the history navigator



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## Hotspots



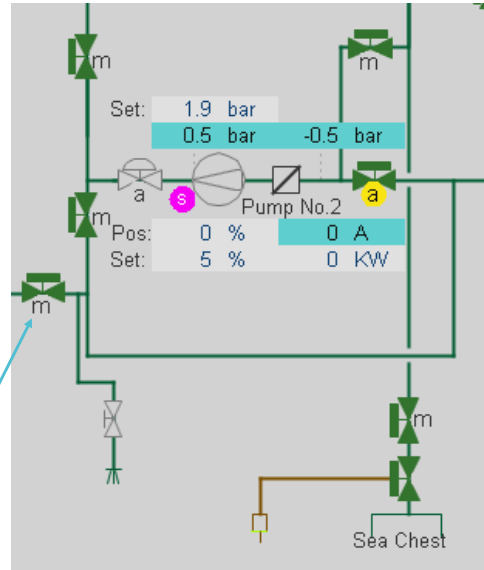
- A Hotspot is a link to a related image
  - Visible as a button or symbol
- When the mouse pointer is placed over a hotspot, it will change to a pointing hand 



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## Function module

- The function module represent a physical field device such as a valve, motor, sensor, switch etc.
- Function modules are represented by symbols
- The symbol may change colour according to situations as; opened, running etc.
- Tag mark indicates modes of operation; automatic, manual etc.



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## Function module

- The module symbol may change appearance in addition to colour

ControlValve in Local with Alarm

The colour convention for dynamic function modules is normally:

Disable terminal	Magenta
Disable Alarm	Olive
Missing Variables	Salmon Red
Inhibit	Cyan
Suppressed	Brown
IO Error	
Passive	

### Colour Alarms

ALARM EMERGENCY PRIORITY	Alarm	Alarm
ALARM HIGH PRIORITY	Alarm	Alarm
ALARM LOW PRIORITY	Alarm	Alarm
ALARM UNPRIORITY	Alarm	Alarm

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## Examples of Tag Marks

Tag Mark	Meaning	Used by (AIM SW Modules)	Colour
	Detached	PID, Motor, Valve, Circuit Breaker	
<b>L</b>	Local	Motor, Valve, Circuit Breaker	Cyan
<b>!</b>	Error	Motor, Valve, Circuit Breaker	Red
<b>s</b>	Shutdown	Motor, Valve, etc.	Magenta
<b>o</b>	Override	PID, Motor, Valve, etc.	Cyan
<b>i</b>	Inhibit	PID, Motor, Valve, etc.	Cyan
<b>!</b>	Override Interlock	PID, Motor, Valve, etc.	Cyan
<b>I</b>	Interlock	Motor, Valve, Circuit Breaker, etc.	Cyan
<b>f</b>	Follow & Freeze	PID	Cyan
<b>e</b>	External	PID	Green
<b>m</b>	Manual	PID, Motor, Valve, etc.	Cyan
<b>a</b>	Auto	Motor, Valve, etc.	Green
<b>i</b>	Internal	PID	Cyan

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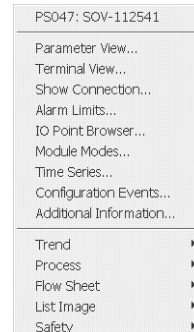
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## Function Module menus

### Operation Menu on the left click



### Context Menu on the right click

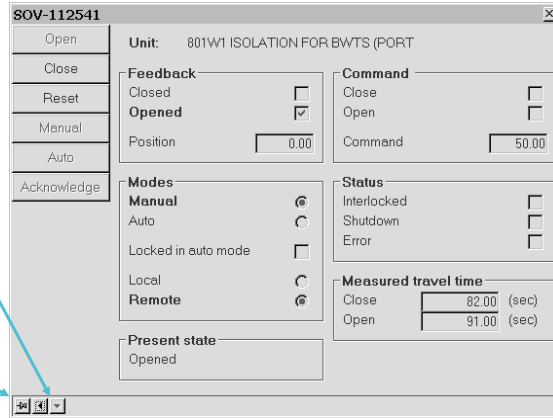




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## Expanded operation menu

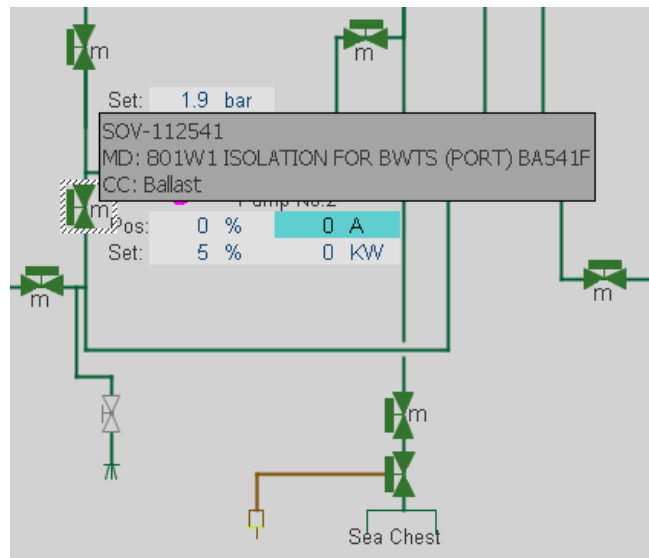
- The expanded operation menu gives further information about the module
- The expanded operation menu is opened/closed by using the arrowheads
- The Pin button is used to anchor the operation menu to the screen



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## Tag information

- When the cursor is held over a symbol, a tool tip with tag name, module description and command control group (if not in command) is shown



MD: Module description

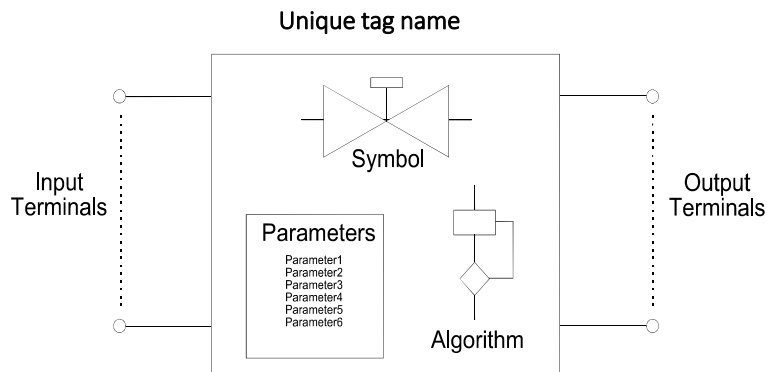
CC: Command control



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## Function Module main parts

A Function module consist of five main parts:



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## Module's main parts description

### Tag name

- The Tag name is a unique identification of the module and identifies the field device this module is representing

### Symbol

- In general a symbol will represent a field device
- The type of symbol will indicate the function/algorithm
- Colour and appearance change according to field device status
- The K-Chief system also includes function modules NOT representing a field device, like modules for logic, calculations, settings etc.
- These modules are not always represented by symbols on process images



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## Module's main parts description continues

### Terminals

- The main purpose of the terminals is to transfer values (data) between function modules and/or the I/O system (field values)

### Parameters

- A set of variables used to define the characteristics and behaviour of the module
- There are 3 main types of parameters:
  - Operation parameters (by the "Operation Menu")
  - Status Parameters (readings from field and calculation)
  - Configuration parameters (tailor making the module to the field device)

### Algorithm

- The algorithm describes the function module software
- For each function module type a "Module User Manual" is available; describing the functionality, parameters, terminals etc.



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## Parameter View – shows values & settings

The image shows a software interface. On the left is a menu for 'PS047: SOV-112541' with options like 'Parameter View...', 'Terminal View...', 'Show Connection...', 'Alarm Limits...', 'IO Point Browser...', 'Module Modes...', 'Time Series...', 'Configuration Events...', 'Additional Information...', 'Trend', 'Process', 'Flow Sheet', 'List Image', and 'Safety'. A blue arrow points from 'Parameter View...' to a window titled 'Module Parameters - PS047: SOV-112541'. The window shows a list of parameters and their values:

Module type:	valved	6.16.1
Unit:	801N1 ISOLATION FOR BWTS (PORT)	
FEEDBACK		
Closed		0
Opened		1
Position		0.00
COMMAND TO VALVE		
Close		0
Open		0
MODES		
Manual/Auto mode		0
Local/Remote mode		1
Interlocked		0
Shutdown		0
ERROR		
Error condition present		0
OTHER INFORMATION		
Locked in auto mode		0
PRESENT STATE		
Present state		Opened
MEASURED TRAVELTIME		
Close	sec	82.0
Open	sec	91.0

At the bottom of the window are buttons for 'Master', 'PSA', 'PSB', 'Print', 'Close', and 'Help'.

1 = True  
 0 = False  
 Manual/Auto (0/1)





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## Parameter View

- Changes to parameters can only be performed by users with extended access rights
- Command control of the tag/module is also required
- The Module User Manual (MUM) for the specific module type describes the parameters shown in the Parameter View

### In general:

- Logic parameters; feedback, commands or calculation, value 1 implies that the text is true/fulfilled, value 0 implies that the text is not true/not fulfilled
  - Parameters like Manual/Auto (0/1)  
Value 0 = Manual  
Value 1 = Auto

### Page 1:

- Monitored (measured) and/or calculated values/status, e.g. Running feedback from a pump

### Page 2 and 3:

- Configuration parameters for tailor making the software module to the field device, e.g. Timeout for start/stop, conditions for interlock



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## Terminal View – shows terminals with current values

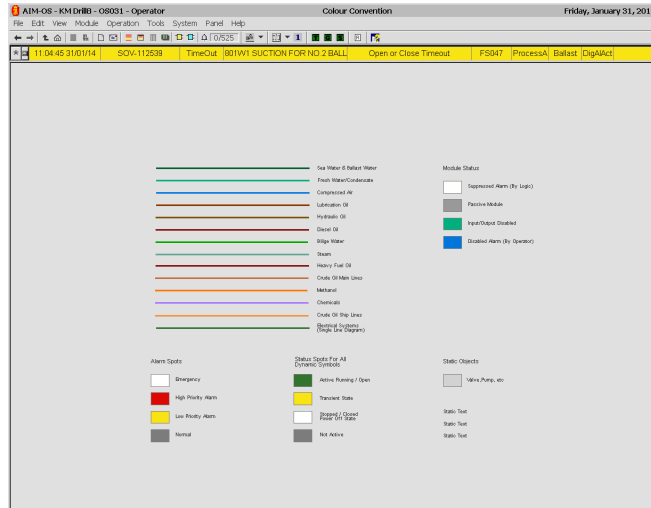
The screenshot shows a software interface for 'PS047: SOV-112541'. On the left is a menu with options: Parameter View..., Terminal View... (highlighted), Show Connection..., Alarm Limits..., IO Point Browser..., Module Modes..., Time Series..., Configuration Events..., and Additional Information... Below this are Trend, Process, Flow Sheet, List Image, and Safety, each with a right-pointing arrow. A blue arrow points from the 'Terminal View...' menu item to a window titled 'Module Terminals - PS047: SOV-112541'. This window has tabs for Page 1, Page 2, and Page 3. It displays two columns of data: 'Input Terminals' and 'Output Terminals'. Each column lists a terminal name followed by its current value. At the bottom of the window are status indicators for Master, PSA, and PSB, and buttons for Close and Help.

Input Terminals	Value	Output Terminals	Value
InOpened	1	OutOpened	1
InClosed	0	OutClosed	0
Remote	0	OutRemote	1
Failure	0	OutCtrMode	0
Control	0	OutFailure	0
ControlMode	0	Incons	0
ShutDown	0	TimeOut	0
Interlock	0	Error	0
ActAlarm	0	Open	0
Flow	0	Close	0
Invisible	0	MaxOpTime	92.0000
ShutDownExt	0	MaxClTime	92.0000
AutoOn	0	OpenTime	91.0000
AutoOff	0	CloseTime	82.0000
ControlOpen	0	SDError	0
ControlClose	0	SDStatError	0
SD1StatIn	0	OutTrip	0
SD2StatIn	0	OutInterlock	0
DeEnergize	0	OpeningControl	50.0000
Position	0.0000	IOError	0
ExtIOError	0	AckOut	1
AckIn	0	RedDevStat	0
InOpened2	0	OutReset	0
InClosed2	0		
InReset	0		



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## Colour Convention - Example



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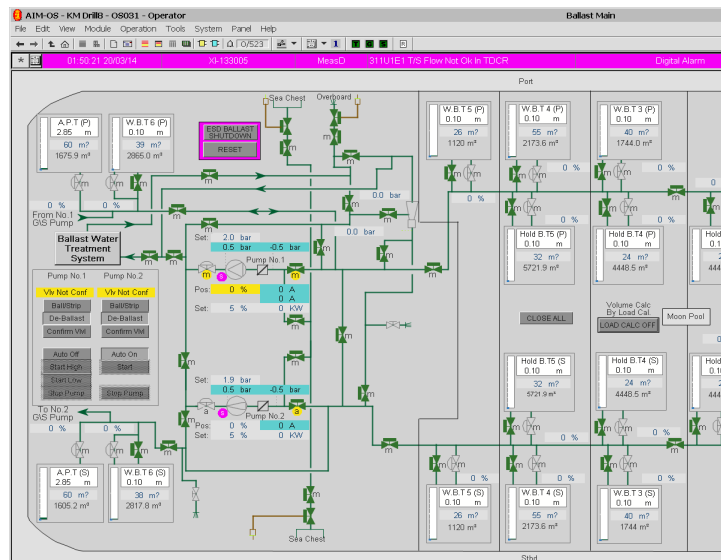
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## Process Image

- Graphic presentation for the monitoring and operation of a system/process
- The graphic provides a real-life vision of the function modules and site arrangements



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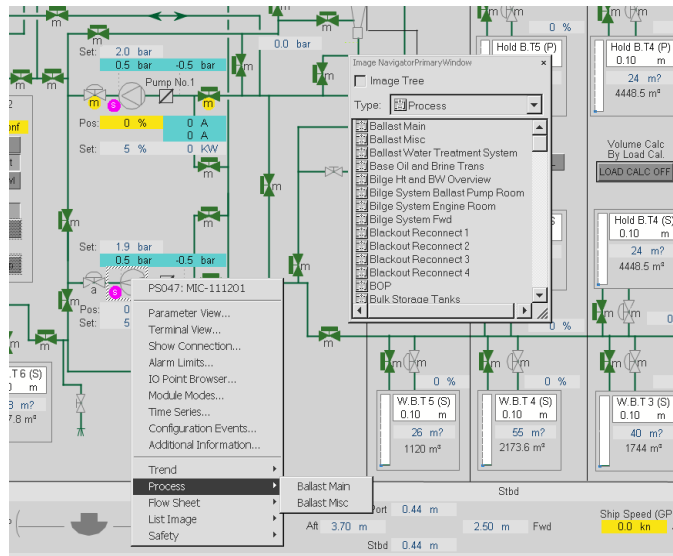
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## Process Image orientation

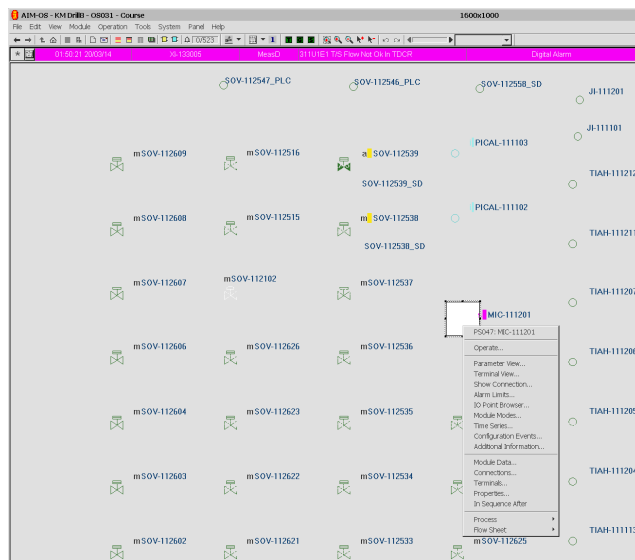
- A module may be presented in several process images



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## Flow Sheet Image

- A graphical image displaying all modules
- Logic, connections and configuring is done on flow sheet image
- By using the context menu it is possible to move between related images e.g. Process or Flow Sheet
- Used as operation images in some applications

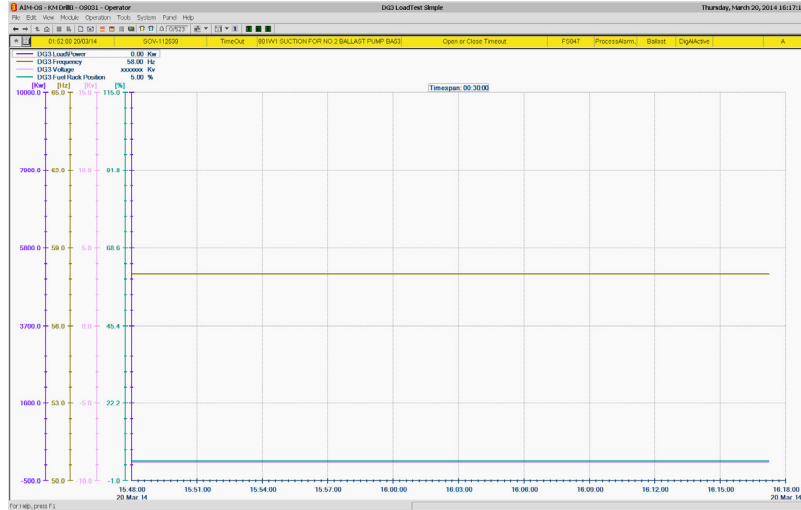






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# Trend Image



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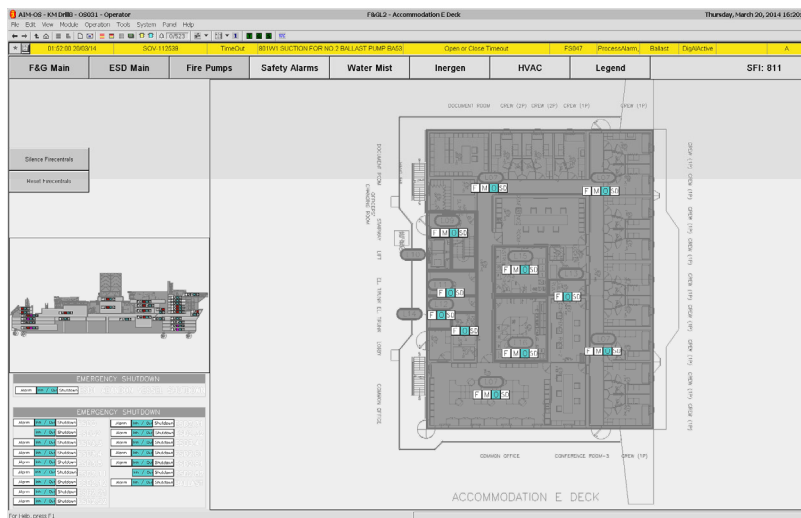
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# Safety



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# System Status Image

Shows operational information about the OS, PS, HS and the network

AINOS-NNH08-08081 Operator System Panel Hsp Thursday, March 20, 2014 18:22:06

System Status

01:52:00.200914 SDV112036 TimeOut 0801W1 SUCTION FOR NO 2 BALLAST PUMP (BA03) Open or Close Timeout FS047 (ProcessAlarm, Ballast, DigActive) A

Station	Status	Error	Exceptional Modes	Spare Time	Free Memory	Net State	IO Errors	Serial Errors	Other Errors	Resulting System Alarm	Uptime	Started	Last Reported
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:55 h	2009/14 13:48:39	2009/14 04:21:57
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:55 h	2009/14 13:48:42	2009/14 04:21:54
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:48:45	2009/14 04:21:53
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:48:48	2009/14 04:21:56
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:55 h	2009/14 13:48:51	2009/14 04:21:53
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:48:54	2009/14 04:21:52
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:48:57	2009/14 04:21:59
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:00	2009/14 04:21:56
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:03	2009/14 04:21:55
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:06	2009/14 04:21:54
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:10	2009/14 04:21:53
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:13	2009/14 04:21:56
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:16	2009/14 04:21:58
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:18	2009/14 04:21:57
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:22	2009/14 04:21:55
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:24	2009/14 04:21:53
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:27	2009/14 04:21:56
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:28	2009/14 04:21:56
PS040	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:32	2009/14 04:21:51
PS180	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:28	2009/14 04:21:59
PS180	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:32	2009/14 04:21:52
PS180	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:34	2009/14 04:21:54
PS180	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:36	2009/14 04:21:56
PS180	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:40	2009/14 04:21:50
PS180	Operational		NONE	0	0	OK	0	0	0	Normal	2:53 h	2009/14 13:49:43	2009/14 04:21:53
PS145	Not Reported												
PS146	Not Reported												
PS147	Not Reported												
PS148	Not Reported												
PS153	Not Reported												
PS164	Not Reported												
PS155	Not Reported												
PS156	Not Reported												
PS157	Not Reported												
PS158	Not Reported												

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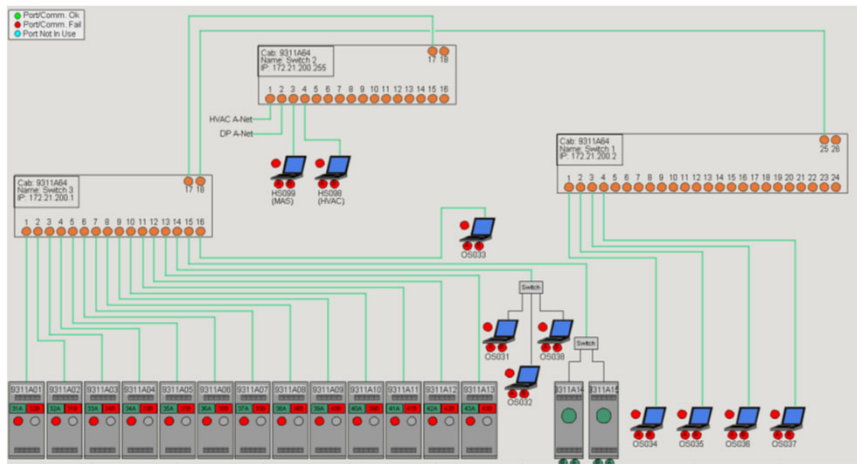
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# System Status Image

Example of a graphical presentation of System Status



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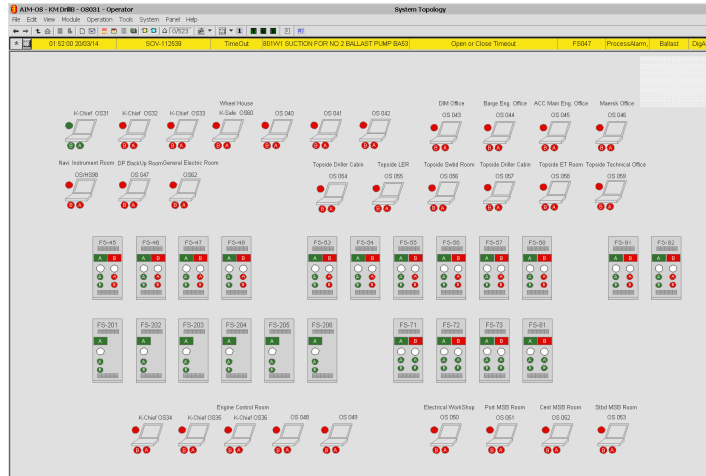
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# System Status Image

Example of a graphical presentation of System Status



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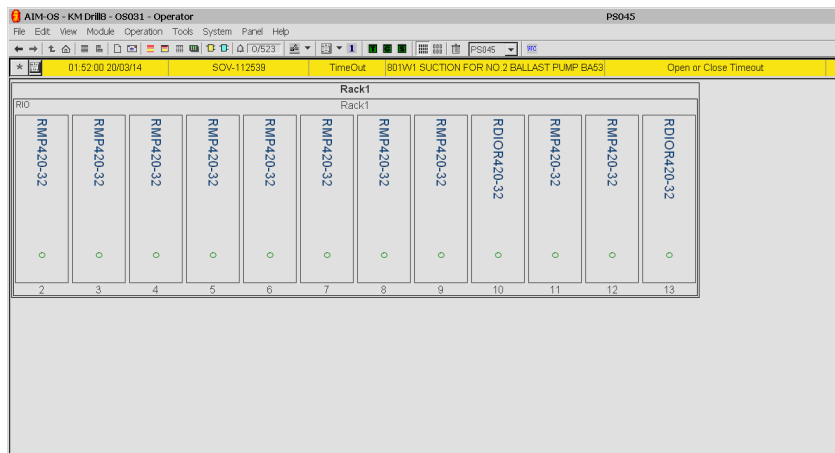
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# I/O System Image

Shows information for the I/O units connected to the Controller.



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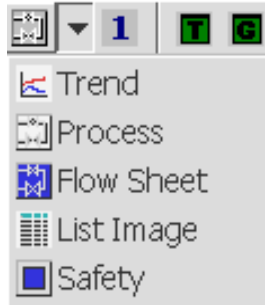
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## TBIN

The Best Image Navigation tab



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## Exercises:

- Module
- Image selection





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## Learning Objectives

- Know the functionality of the navigator
- Recognise different types of images
- Recognise image icons in the toolbar
- Know the functionality of the BU-AUT panel
- Recognise and describe the functionality of hotspots and hidden hotspots.
- Explain navigation through TBIN (The Best Image Navigation tab)
- Explain navigation from the Context menu
- Carry out navigation in the K-Chief 700 system
- Interpret different Function module symbols
- Explain the information given by the Tooltip for a function module
- Explain the most common Tag marks
- Explain the Function module concept and main parts
- Explain the Operator menu properties
- Use the Function module operator menu to open/close and start/stop
- Use the extended operator menu to retrieve essential status and settings from the Function module
- Identify the Module context menu
- Identify and interpret the Parameter view

