NavVision Operators Manual

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Introduction

This Operating Manual contains all essential information for the user to make full use of FT NavVision. This manual includes a description of the alarm functions, monitoring functions, control functions and additional capabilities. Also described are contingencies and alternate modes of operation, as well as step-by-step procedures for system access and use.

About the Operating Manual

This manual contains the following sections:

- *Safety instructions* presents warning, caution and note information, which the user should pay attention to;
- *Human Machine Interface* contains explanation on the look and feel of the visible part of FT NavVision;
- *Duty Alarm System* explains how to work with the AM(C)S system and how the different parts are integrated in FT NavVision
- *Personnel Alarm* explains the workflow of the various Deadman systems across FT NavVision.
- *Mimics* shows how to work with the various interactive possibilities within FT NavVision's mimics.

For specific information on interfaces, but also in depth information on features, mentioned here or not, we refer you to their specific manuals which can be obtained through Imtech.

Abbreviations list

AM(C)S	Alarm Monitoring (& Control) System
COM	Communication
CPU	Central Processing Unit
DAP	Duty Alarm panel
DM	Dead Man's
ECR	Engine Control Room
GEA	General Engineers Alarm
GPS	Global Positioning System
GRP	Group
ID	Identification
I/O	Input/Output
LAN	Local Area Network
LED	Light Emitting Diode
LPU	Local Processing Unit
MAC	Media Access Control
NMEA	National Marine Electronics Association
OWS	Operator Work Station
SMS	Short Message Service
TCP/IP	Transmission Control Protocol/ Internet Protocol
TFT	Thin Film Transistor
USB	Universal Serial Bus

Safety instructions

This section provides only a summary of the safety requirements and notes in the following sections. To protect your health and prevent damage to the AM(C)S equipment or vessel, it is essential to read and carefully follow the safety instructions.

The indications NOTE, CAUTION and WARNING have the following significance:

NOTE:
An operating procedure, practice or condition etc., which it is important to emphasize.

CAUTION:
An operating procedure, practise or condition etc., which, if not strictly observed, may damage AM(C)S equipment or crash NavVision software.

WARNING:
An operating procedure, practise or condition etc., which, if not carefully observed may result in personal injury or damage to the vessel.

Revision history

Revisions issued since publication.

Issue	Date	Revision	Reason
2.1.1	September 09, 2014	New version	Decimus update
2.1.2	December 12, 2014	Updates	Development
2.1.3	July 16, 2015	Updates	Development

1. Human Machine Interface

The FT NavVision *Human Machine Interface* (HMI) displays the current state of any physical device (I/O) on one or more monitor screen(s) by color, animation or values.
Moreover, when an undesirable state of a device is detected the operator will be notified by means of an audible and/or visible alarm signal. Messages concerning the alarm are added to the FT NavVision list of active or unacknowledged alarms (*Alarm Page*). This list can be displayed by clicking the Imtech logo in the center of the taskbar.
The HMI also supports remote platform control. Operators can control the platform (vessel) via the HMI.

1.1 Taskbar

NavVision's main User Interface (UI) element is the taskbar, positioned on top of each screen. The taskbar is home to the shortcuts to various settings, modules and mimics.
In addition, when an alarm is registered, the middle portion of the taskbar turns a bright red and shows the most recent unacknowledged alarm, the number of active alarms, and the total number of unacknowledged alarms. A single mouse click on this portion of the taskbar links to the extensive alarm viewer, showing the data for each active alarm such as time, alarm group, status and duration.

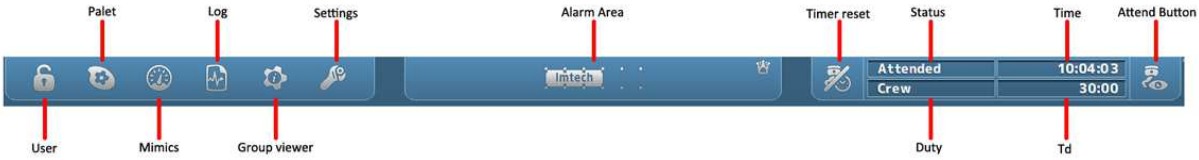


Figure 1-1: NavVision taskbar

Takbar Icon	Explanation
User	Setting of user and user rights
Palette	Setting of colors and day, dusk or night mode
Mimics	Selecting the mimics
Log	Show the log files
Group viewer	Show information on all I/O
Settings	Entry to all settings
Alarm Area	Click to show/hide alarm mimic
Timer Reset	Reset deadman timer, show active/inactive state
Status	Show status of attendance of the ER
Duty	Show person on duty
Time	Time
Td	Time dormant (for deadman timer)
Attend Button	Attend/unattended button for ER or Bridge

Table 1: NavVision taskbar

1.1.1 User rights

FT NavVision handles control rights by using log-in credentials (username and password), and assigning rights to these credentials. These rights limit access to the system's configuration, therefore ruling out any edits that may harm the system made by unauthorised crewmembers.

Users can be added, edited or removed. Adding, editing and removing users, together with assigning their rights, can only be done by an administrator, i.e. a top-level user.
For every profile made, permissions can be set. The system is delivered with three pre-configured user-profiles, namely:

1. *Administrator*: has all rights;
2. *Guest*: can only use the available viewers;
3. *Operator*: can only alter display mode and/or units.

Login is required upon system start-up. After start-up, users can log off and log in using the dedicated button on the taskbar. By clicking the button, the following window will appear:

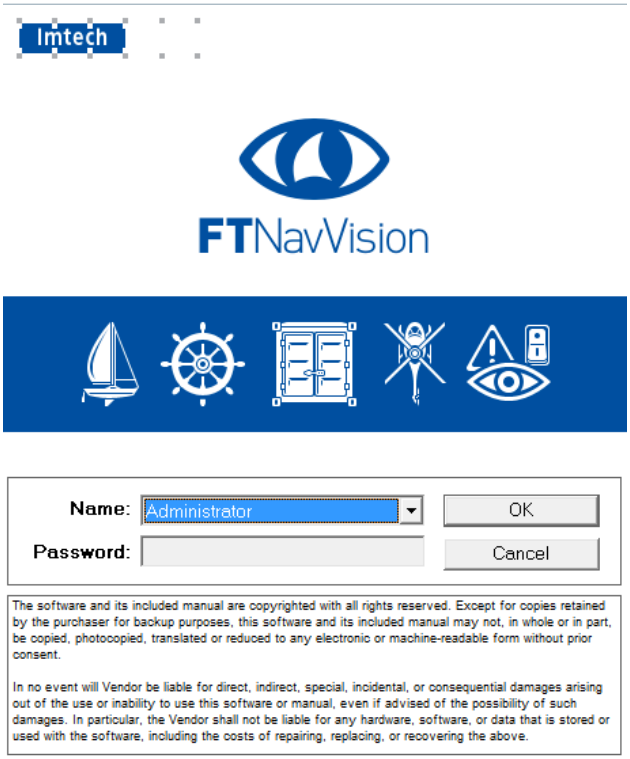


Figure 1-2: User selection

By clicking the drop-down menu “Name”, you can choose which user you want to start. Provide the password if necessary and click “OK”.

1.1.2 Palette

The palette is meant to give a quick selection to change the color settings of the screen. When you click the button, you'll be presented with 4 choices (see Figure 1-3).

Figure 1-3: Palette options

From left to right (beginning top left), there are three predefined buttons: Day, Dusk and Night. These choices give you the right colors and brightness for these specific periods of time. The last one is the palette selection tool. Using this, you can change the colors of the three presets to your liking.

When you change the colors of a preset, be aware that there is no "Default" setting. It might be hard to get the colors back to their old state. This is the reason that this button is disabled in operator mode.

1.1.3 Mimics

When you click the mimic button, you're presented with a grid of mimics available to you. It's possible that you have all the mimics as numbers so you have to choose the right number (see Figure 1-4).
If you know the right number for the mimic you want to see, simply click on the corresponding icon.
Quite often, the only mimic icon that is presented is number one. This is the home mimic. From the home-mimic you can then navigate to other mimics.

If in scope the numbered icons can be changed to a more appropriate setting. Visual representations of the mimic's behaviour can be shown as an icon to make it more intuitive.

Figure 1-4: Mimic menu

1.1.3.1 Mimics

The FT NavVision mimic presentation function provides schematic and graphical overviews of the vessel's systems like navigation lights, electrical, piping and hydraulic overview.
The screens and mimics presentations are automatically updated with live data of the platform components illustrating components and/or system status.
Via these screens and mimic pages, the operator is able to monitor and control the vessel by using the trackball or touch-screen as a pointing device by selecting elements and their associated commands.

1.1.3.2 General

In general, we say that every page that represents a set of values, switches or any other representation of data is a mimic. The mimics within the system are all freely adjustable within the design stage. After the system is delivered, changes can be made by the NavVision engineers, on appointment. Small changes to the mimic can be made by a trained and skilled operator, who is granted some extra rights in the system. This trained crewmember will have the documentation, so we won't discuss the changing of mimics in this manual.

1.1.3.3 Mimic examples

Although the mimics are freely adjustable, the main setup will be greatly alike on your screen. Imtech has defined some rules that the mimics have to live up to. This results in an overall recognizable style of mimics that gives it the modern and stylish look and feel.

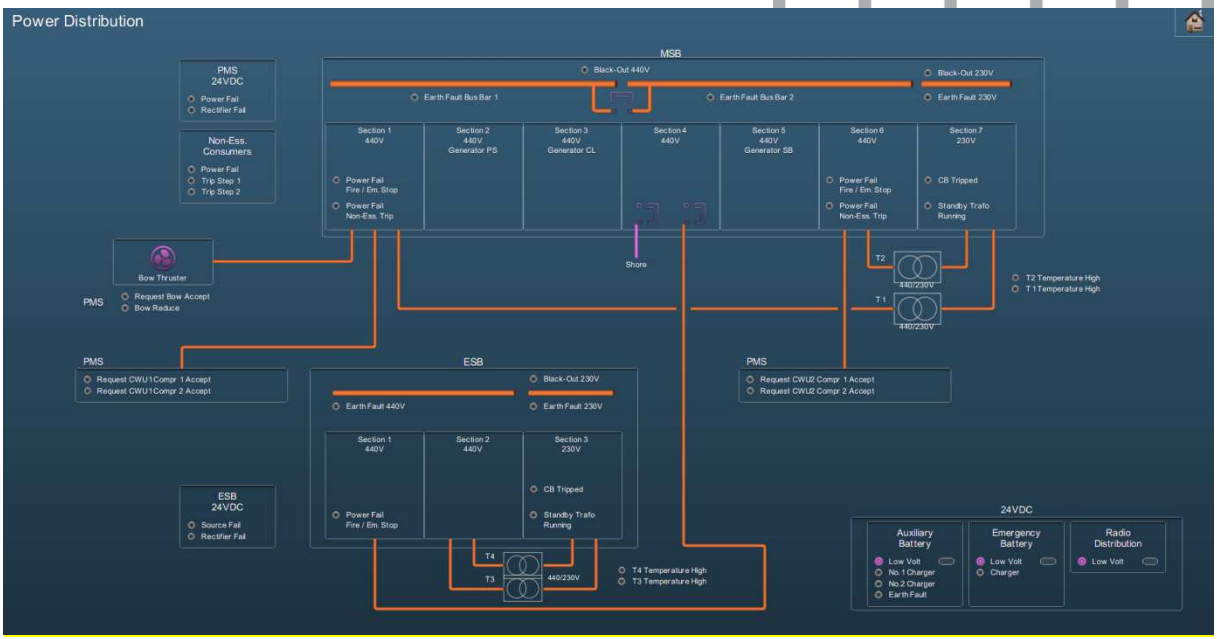


Figure 1-5: Mimic example 1

1.1.3.4 Reading the mimic

Some installations contain a special *legend* mimic. This mimic explains the symbols, variations, colors etc. that you can find in your system's mimics (see Figure 1-6). If there is ever a doubt in what you observe on the mimic you are watching, please refer to this mimic.

Figure 1-6: Legend mimic

Other mimics can show a variety of information. There can be mimics for power distribution, tank volumes (see Figure 1-7), fire alarms and many more. It is also possible that you have a combination of subjects on one mimic. Mimics are perfectly capable of displaying camera feeds or trend graphs.

As a special feature you can show the alarm list or the logbook on (part of) the mimic (see Figure 1-8).

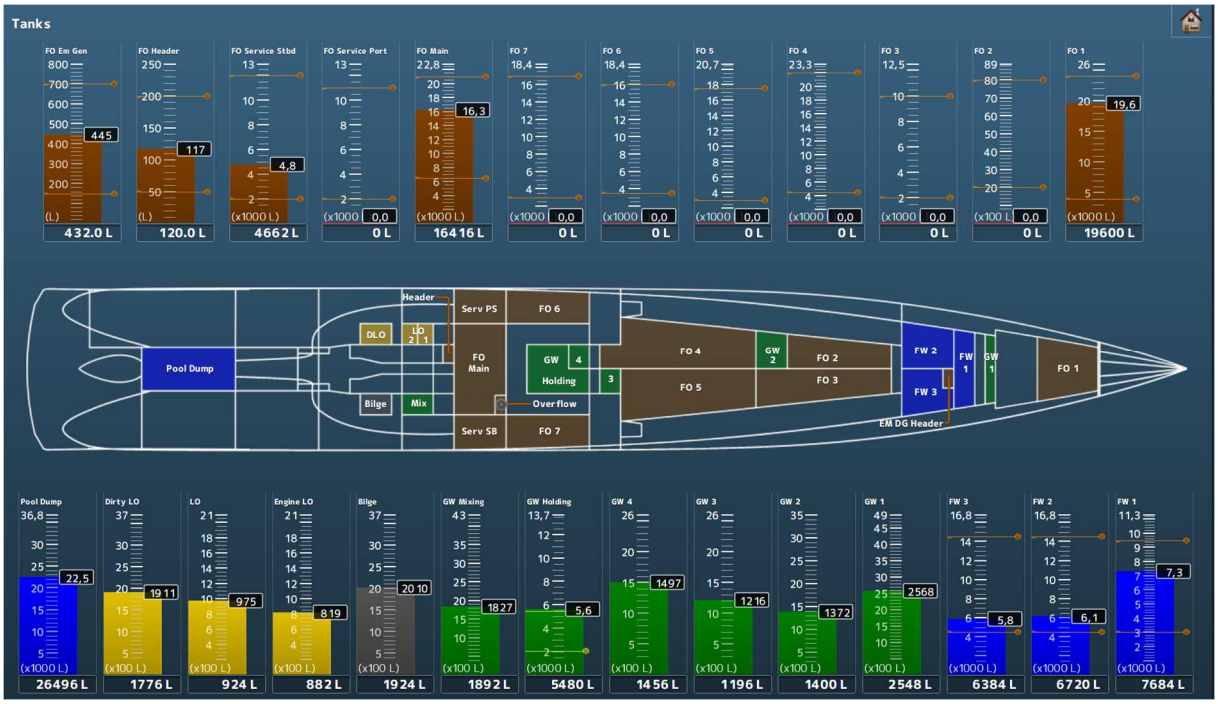


Figure 1-7: Tank mimic

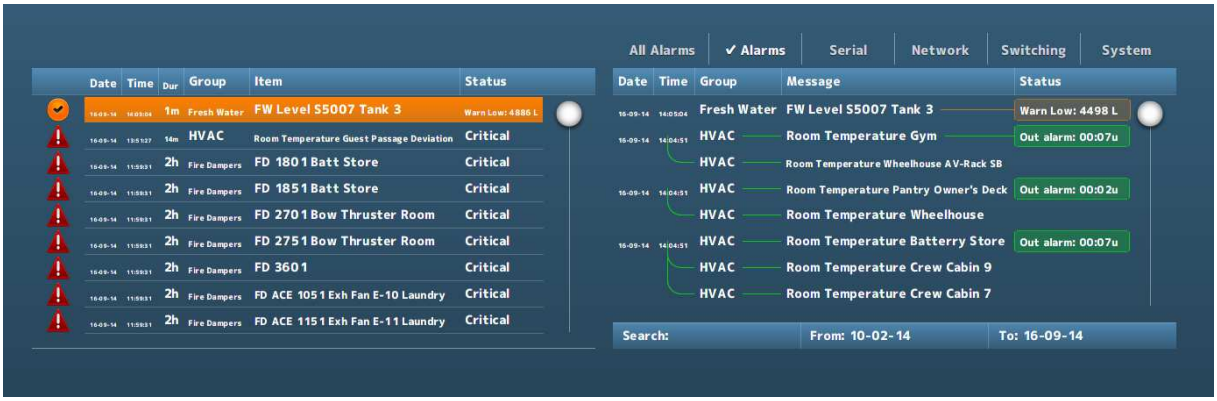


Figure 1-8: Alarm list and logbook in mimic

More extensive explanation on control in a mimic can be found in Annex 1 (See Chapter 6, page 48).

1.1.4 Logbook

During normal operation, all system events are registered chronologically. By clicking the *Logbook* button (see Figure 1-1), these registered system events are displayed in a dedicated screen. It is also possible to show the logbook in any mimic (see Figure 1-8).

1.1.4.1 Logbook groups

In order to separate various categories of information from each other, log entries are stored in various logging-groups. You can select them all or just a few of them, or even one if you need to focus on these entries. Just by selecting the category label at the top of the list, you filter the information you need (see Figure 1-9).

Figure 1-9: logging groups, all selected

Logging group	Explanation
All Alarms	Alarms from all stations (even alarms you might not see on this station will be logged)
Alarms	All alarms from this station (all alarms that are visible on this station will be logged)
Serial	All serial information available on this station will be logged (initializing, finalizing and errors)
Network	All network information available on this station will be logged (Connecting, conn. Failed and errors)
Switching	All system, network and program switching
System	All process information and errors

Table 2: Logging groups

1.1.4.2 Logbook appearance

All identical log entries that appear at the same time will be interconnected as shown in the following figure (see Figure 1-10).

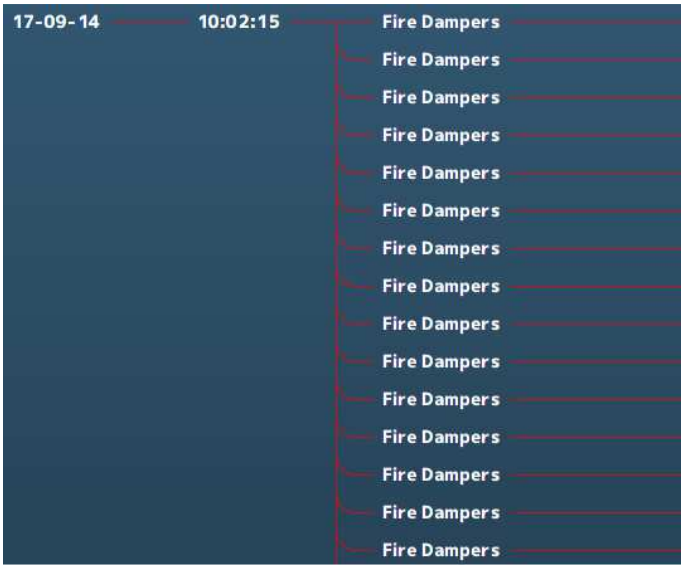


Figure 1-10: interconnecting log appearance

1.1.4.3 Logbook status indication

All entries will have an explanatory status indication at the end of the entry line. This will give an indication about the reason that the indication is in the logbook (see Figure 1-11).

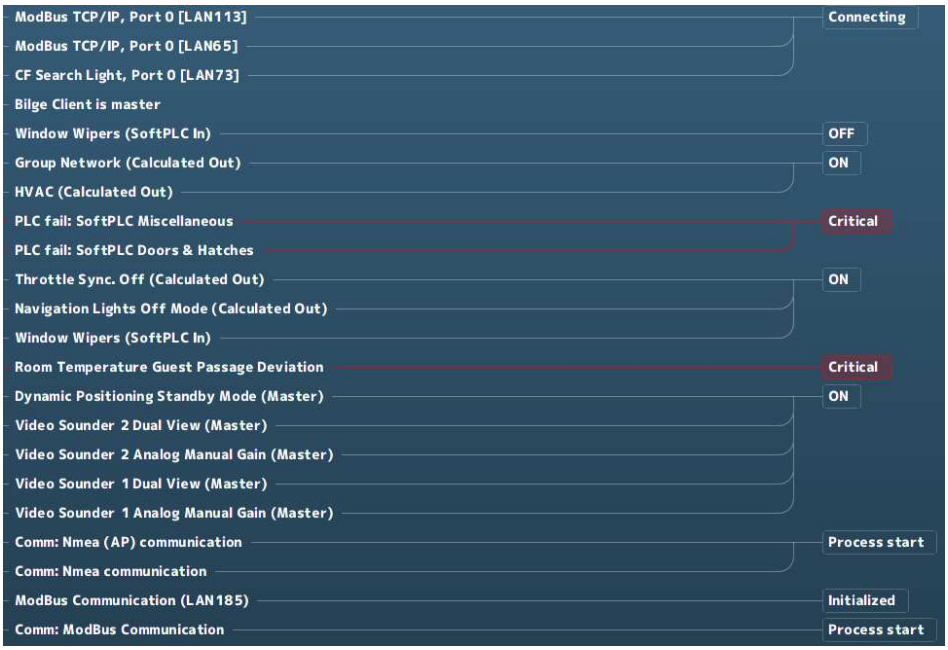


Figure 1-11: Status indication log-entries

When logging alarms, this status indication will also be colored.

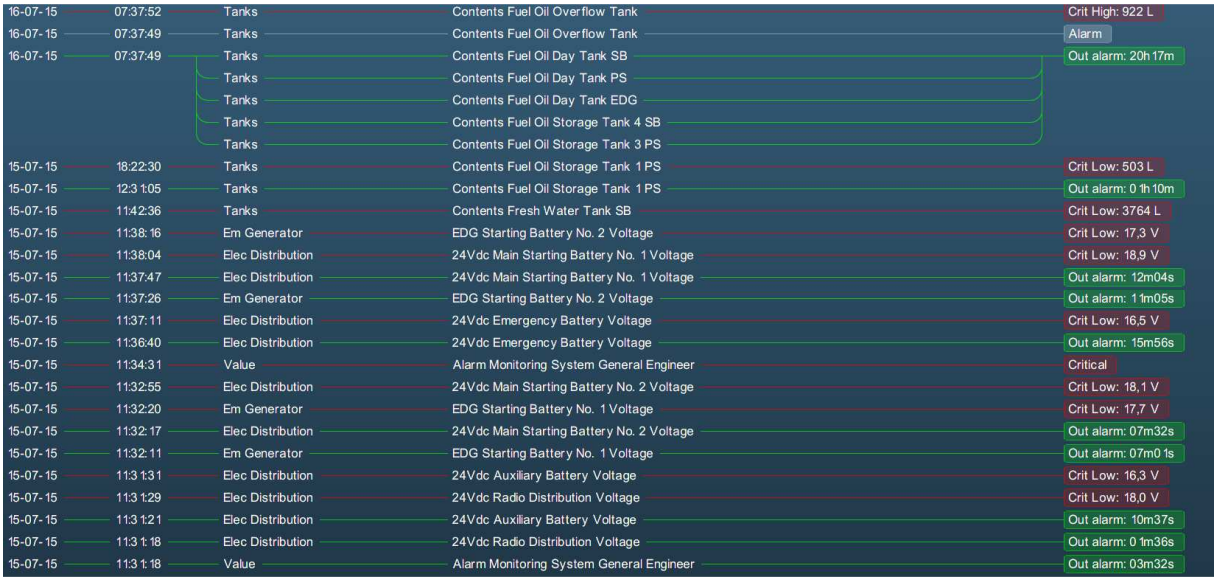


Figure 1-12: Logging colors

Logging colors	Explanation
Grey	Acknowledged
Green	Out of alarm or OK
Yellow	Caution
Orange	Warning
Red	Critical, Emergency, Slowdown and Shutdown

Table 3: Logbook colors

1.1.4.4 Logbook search bar and buttons

At the bottom of the logbook, you will find a search bar and a few buttons (see Figure 1-13). In the search bar, you can click and type the name of the listing you are looking for. After hitting *Enter* the listing is shown, if available.

Figure 1-13: Logbook search bar and buttons

If you click on the “From:” or “To:” on the search bar, a new window will appear (see Figure 1-14). This window is a fully working calendar from which you can choose a “From” or “To” date. After you have entered the date and pressed the checkmark, the entries that occurred in the entered timeframe are shown.

Figure 1-14: Search calendar

Figure 1-15: Print button

Figure 1-16: Up- down buttons

If you click the *Print* button, you can print the logbook (if a printer is available). With the *Up* & *Down* buttons you can scroll to the top, up or down.

1.1.5 Group viewer

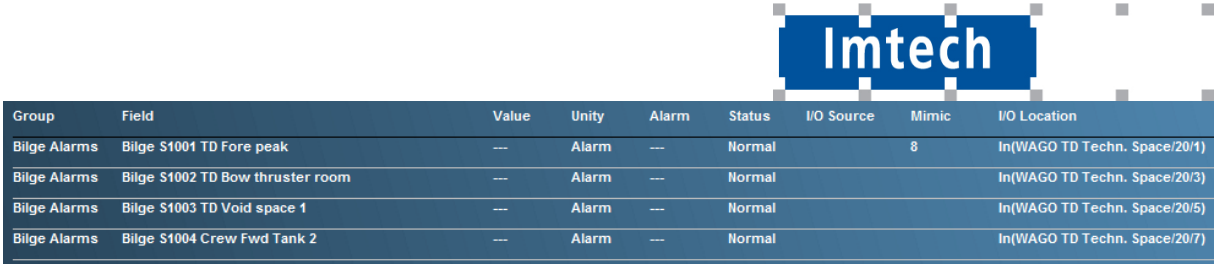
The *Group Viewer* is the place within FT NavVision that holds the necessary information about all connected I/O. In this window, you can find a descriptive line for all the sensors with their connections and dependencies (see Figure 1-17).

Group	Field	Value	Unity	Alarm	Status	I/O Source	Mimic	I/O Location
Engine	Engine Auxillar Switch 01	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 02	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 03	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 04	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 05	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 06	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 07	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 08	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 09	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 10	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 11	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 12	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 13	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 14	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 15	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 16	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 17	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 18	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 19	Off	Switch	---	Manual	Simulated		
Engine	Engine Auxillar Switch 20	Off	Switch	---	Manual	Simulated		
Engine	Engine Battery Discharge	Off	Switch	---	Manual	Simulated		
Engine	Engine Block Heater	Off	Switch	---	Manual	Simulated		
Engine	Engine Coolant Level Switch	Off	Switch	---	Manual	Simulated		
Engine	Engine Coolant Pump	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 1	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 2	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 3	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 4	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 5	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 6	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 7	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 8	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 9	Off	Switch	---	Manual	Simulated		
Engine	Engine Cylinder Knock 10	Off	Switch	---	Manual	Simulated		
Engine	Engine DP Mode	Off	Switch	---	Manual	Simulated		
Engine	Engine ECU Active	Off	Switch	---	Manual	Simulated		

Categories | Engines | <All>

Figure 1-17: Group viewer

There are various columns that each list a specific piece of metadata of an I/O point in clear language or digits and colors.



Group	Field	Value	Unity	Alarm	Status	I/O Source	Mimic	I/O Location
Bilge Alarms	Bilge S1001 TD Fore peak	---	Alarm	---	Normal		8	In(WAGO TD Techn. Space/20/1)
Bilge Alarms	Bilge S1002 TD Bow thruster room	---	Alarm	---	Normal			In(WAGO TD Techn. Space/20/3)
Bilge Alarms	Bilge S1003 TD Void space 1	---	Alarm	---	Normal			In(WAGO TD Techn. Space/20/5)
Bilge Alarms	Bilge S1004 Crew Fwd Tank 2	---	Alarm	---	Normal			In(WAGO TD Techn. Space/20/7)

Figure 1-18: Group Viewer columns

Column	Explanation
Group	The alarm group the I/O point belongs to
Field	The item name of the I/O point (FT NavVision ID-tag)
Value	Actual value of the I/O point
Unity	The Unity of the I/O point
Alarm	Shows if the I/O point is in alarm and the value of the alarm
Status	Status of the I/O point
I/O Source	The source (interface) the I/O point comes from
Mimic	The mimic(s) the I/O point value is present
I/O Location	The location where you can find the I/O point physically

Table 4: Group Viewer columns

1.1.5.1 The search bar

Using the search bar, you can reduce the amount of searchable data to a specified group. This way it is easier to pinpoint the faulty I/O point you are looking for. (see Figure 1-19).

Figure 1-19: Search bar

In the first drop-down menu, you can choose between *Categories* and *Alarm Groups* in which you change between the standard arrangement of categories as set in FT NavVision or the division in alarm groups.

When choosing for *Alarm Groups,* you have the choice to narrow the selection down even further to the specific alarm group that you are looking for (see Figure 1-20).

When you choose for the *Categories*, you can narrow it down to the group and even subgroup for that particular I/O point (see Figure 1-21 and Figure 1-22).

The last input field is a search box, to quickly narrow down the options.

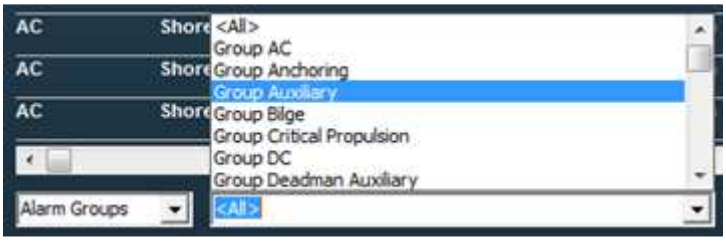


Figure 1-20: Alarm groups

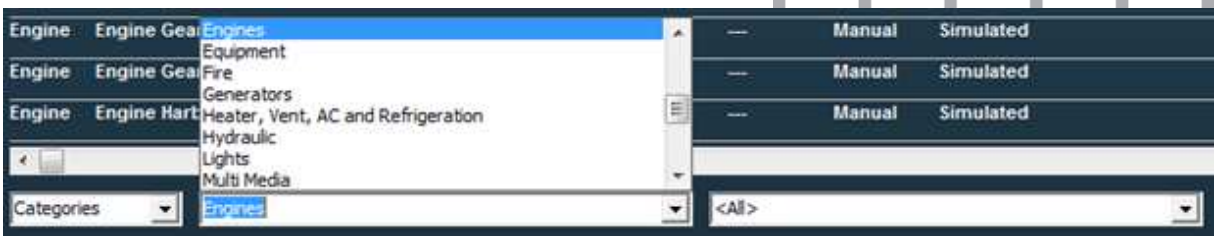


Figure 1-21: Categories group

Figure 1-22: Categories subgroup

If there is an I/O point currently in alarm status, it will give information on the fact that it is in alarm (red) and what its status is (see Figure 1-23). Also the mimic it is presented on and the I/O location can be read from the group viewer (see Figure 1-24).

Figure 1-23: Group viewer in alarm

Figure 1-24: Group viewer mimic and I/O location

1.1.6 Settings

The settings Icon is not applicable to the operator. There is nothing in this submenu that may be adjusted by an operator.

1.1.7 Alarm Mimic

The *alarm mimic* is the central place where all relevant alarms are shown in clear and unambiguous language and coloring. The smaller *Alarm area* in the taskbar will always be available and visible. Here, each alarm will be shown immediately. When you click the area, the larger Alarm mimic is shown (see Figure 1-25).

The Alarm mimic will always be on top of all the other windows, so if you want to look at other mimics, you will need to close the alarm mimic first.

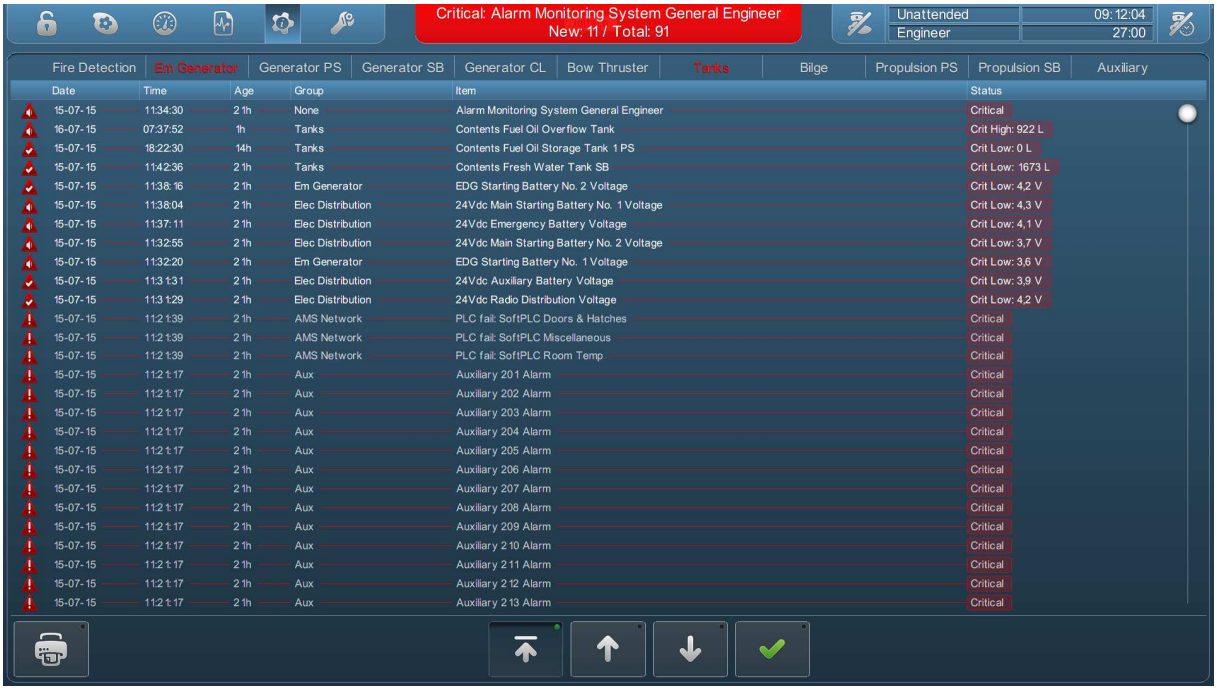


Figure 1-25: Alarm mimic

Depending on which rights your station has, more or less buttons and/or alarm-information are shown.

The order will, by default, be as follows:

- Critical alarms
- Warnings
- Cautions
- Time of appearance

So the latest *critical alarm* will always be on top. The latest *warning* will always be on top, after all *critical alarms.* Similarly, the latest *caution* will always be on top after all *critical alarms* and/or *warnings*.

In the engineering phase it is possible to set the alarm sequence to chronological.

When clicking once on an alarm line a pop-up will appear (see Figure 1-26). This pop-up will give you direct the most relevant information on that particular alarm such as ID, CableNumber, Device etc. This way it is easier for the operator to pinpoint the location of the alarm. Another click will make the pop-up disappear.

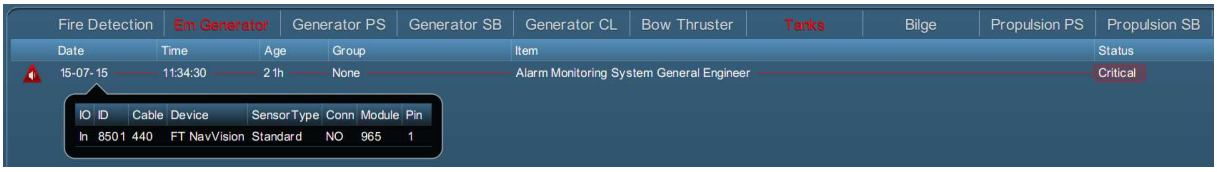
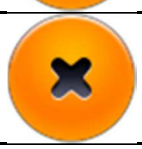


Figure 1-26: Alarm list pop-up

1.1.7.1 Alarm icons

The alarm icons have distinctive colors and symbols, so you can see exactly what is going on with each alarm. A brief explanation of each icon is shown in the following table.

Icon	Explanation
	Critical alarm: Unacknowledged
	Critical alarm: Silenced
	Critical alarm: Acknowledge not allowed
	Critical alarm: Acknowledged
	Critical alarm: Rectified
	Critical alarm: Transferred
	Warning: Unacknowledged
	Warning: Silenced
	Warning: Acknowledge not allowed

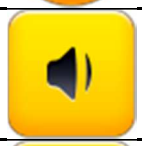
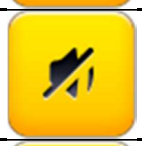
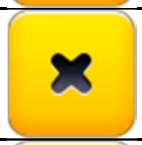
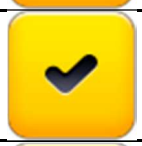
	Warning: Acknowledged
	Warning: Rectified
	Warning: Transferred
	Caution: Unacknowledged
	Caution: Silenced
	Caution: Acknowledge not allowed
	Caution: Acknowledged
	Caution: Rectified
	Caution: Transferred

Table 5: Alarm Icons

The bottom of the alarm mimic houses buttons for printing and scrolling.

Figure 1-27: Print button

Figure 1-28: Up- down buttons

Upon clicking the *Print* button, you can print the alarm list (if a printer is available). With the *Up/Down* buttons you can scroll up, down or jump to the top of the list.

The rest of the Alarm mimic will be explained in Chapter 2 (Duty Alarm System) and in chapter 3 (Personnel Alarm).

2. Alarm System

2.1 Introduction

The alarm system provides clear and unambiguous representation of all the alarms that take place at a certain time and present that on any screen that has the rights to show that alarm. There is a difference between the alarm system and the Duty alarm system. The alarm system shows all the alarms to all the stations with the specific rights. The Duty alarm system divides the (machinery) alarms to a station “on duty” in case of an unmanned machinery space.

2.2 Alarm handling

Alarm handling is determined in a set of international rules by standardization organisations. These rules are visualized in Figure 2-1.

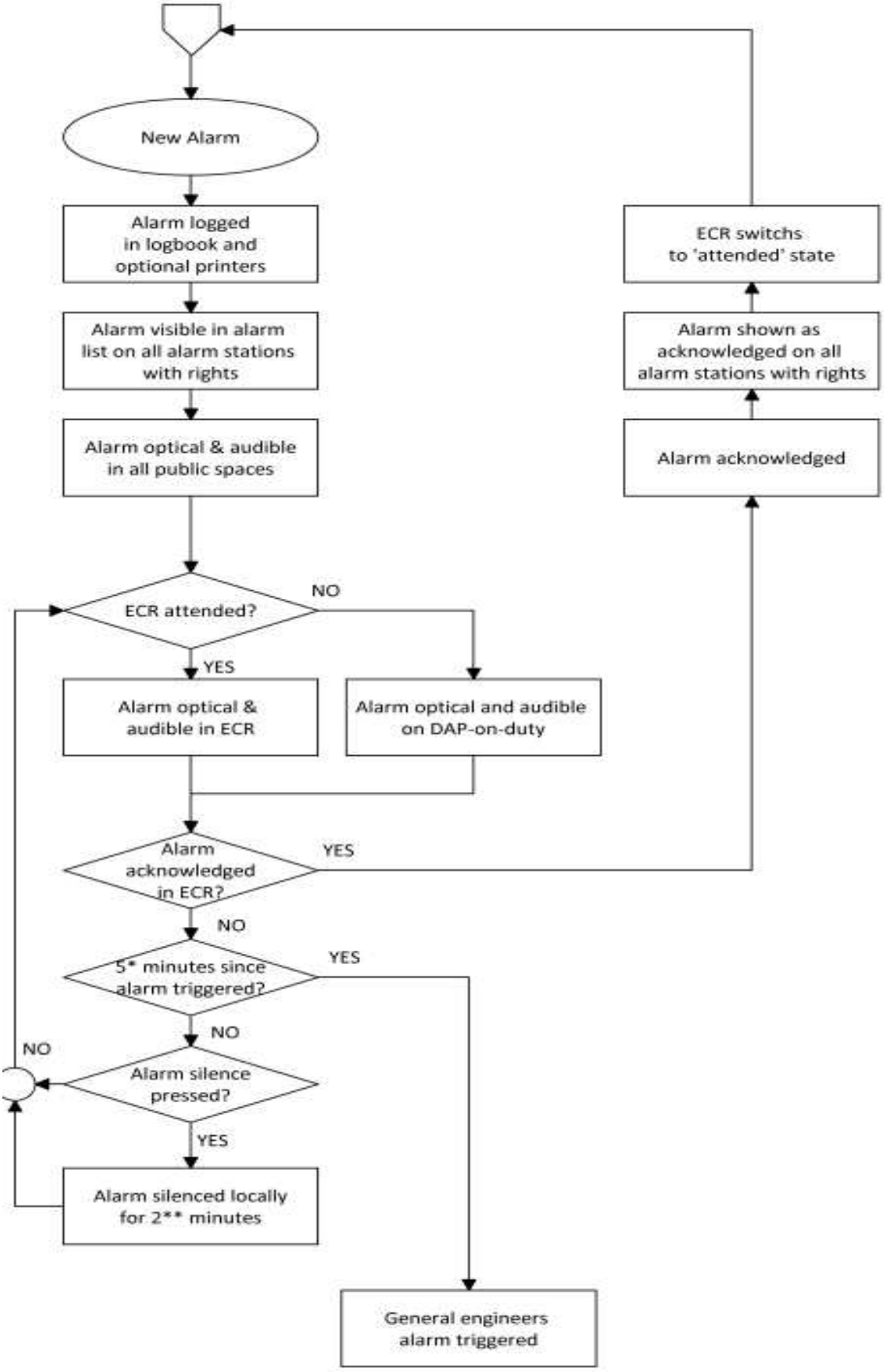


Figure 2-1: typical alarm sequence

2.3 Alarm handling in the alarm mimic

As shown in Figure 1-25, all cautions, warnings and critical alarms will be shown in the taskbar and, more extensively, in the main window of the Alarm mimic. In *Table 5: Alarm Icons,* you will find the explanation of the various alarm icons and their meaning.

When you look further at the alarm mimic, you'll notice more values and buttons. The row just above the alarm window (see Figure 2-2), is the *alarm group row*. Depending on the alarm groups set here at initialisation of the system, you can see in which groups the alarms on the alarm page reside.

Figure 2-2: Alarm group row

When even a single alarm within a group is active, the group label will turn red. This way you can see quickly in which group there are alarms.

When you click on this specific group label, the alarm mimic will be filtered to show only the specific alarms in that group. This will come in handy when you have a lot of alarms on the screen. After 10 seconds it will revert to the complete alarm list.

When you want to silence or acknowledge an alarm, you can double click on the alarm entry. Depending on the rights your station has, double-clicking will either silence, acknowledge or do nothing with the entry. Alternatively, you can click the silence/acknowledge-button (see Figure 2-3) to silence/acknowledge all visible alarms in the alarm mimic. Depending on how many alarms you have, you will need to click one or more times to do this for all the alarms as this action only applies to the alarms currently visible on the screen.

Figure 2-3: silence/acknowledge-button

2.3.1 Explanation of alarm rights

During commissioning of the system, all stations will be set to their respective alarm station names with the distinctive rights set accordingly. Class demands that the only place where an alarm may be acknowledged is the space where you can act upon the alarm directly. This usually means that 99 percent of the alarms can only be acknowledged in either the engine room (ER) or the engine control room (ECR). For the other stations, the rules state that the alarms (if shown) can only be silenced. This means that the alarm stays unrectified and unacknowledged and only the buzzer will be silenced (at most for 3 minutes).

If you are unable to acknowledge or silence alarms, you probably don't have the rights.

2.4 Duty alarm system

The *Duty Alarm System* provides (machinery) alarms to bridge, cabins and public areas for an unattended (unmanned) machinery space. The duty alarm system is configured upfront.

Duty Alarm Panels (DAP's, see Figure 2-5) at specific locations are connected with the automation system via the LAN-network. They display the information for machinery alarms and settings such as alarm group status, operation status, and on-duty selection.

The duty alarm system provides for signaling of Engine Control Room (ECR) to the cabins and bridge by a *Duty Alarm Panel* (DAP) or on a *Local Operator Panel* (LOP).

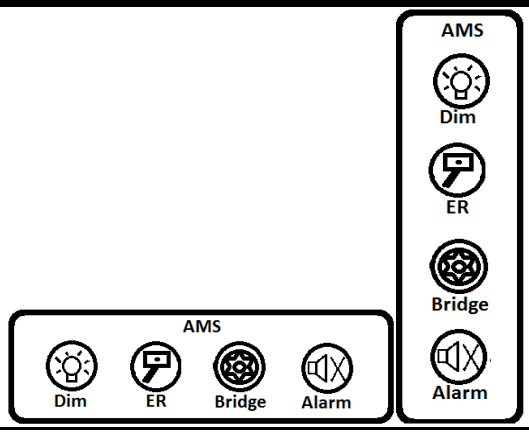
An engineer on duty can be selected from the *Operator Workstation* (OWS). He will be warned when an critical alarm is present in the unmanned engine room.

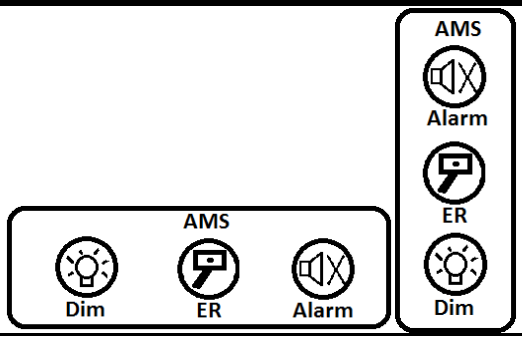
An engineer can be called on duty from the ECR on the OWS. Each station has its own caller identification.

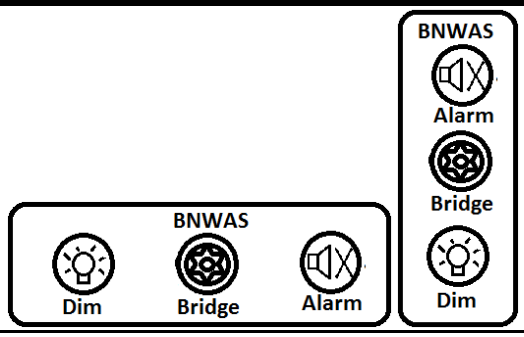
When no DAP is used, the duty alarm system can be implemented with small or larger hardware panels as shown in the following figures:

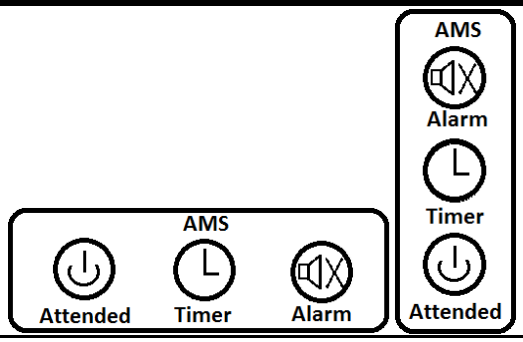
Figure 2-4: typical Alarm panels

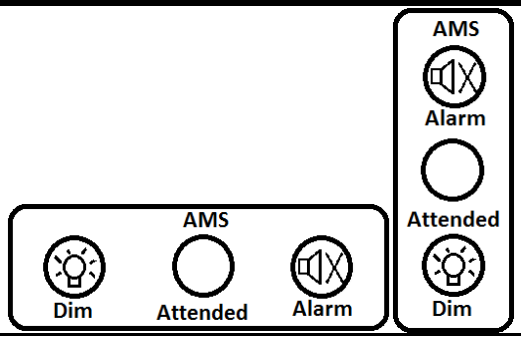
These panels come in the following editions, with their own respective operation.

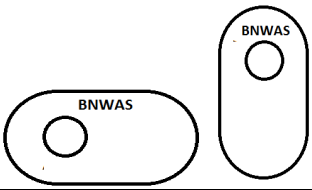
Panel horizontal-vertical	
	
Location of use:	Crew cabins that can be selected for Bridge duty as well as for ER duty

Panel horizontal-vertical	
	
Location of use:	Crew cabins that can be selected for ER duty

Panel horizontal-vertical	
	
Location of use:	Crew cabins that can be selected for bridge duty

Panel horizontal-vertical	
	
Location of use:	At each entrance door of the ER, or in the ECR

Panel horizontal-vertical	
	
Location of use:	Main or secondary bridge

Panel horizontal-vertical	
	
Location of use:	All spaces where Bridge duty crew can be available (no duty select)

Button	Explanation
	Dim the button LED's of that panel Illuminates when panel is active
	Silence the alarm Illuminates when an alarm is active
	No push activity Illuminates when ER duty
	No push activity Illuminates when Bridge duty
	Press for attended/unattended mode Illuminates when attended
	No push activity Illuminates when timer is active

Table 6: Alarm panel buttons

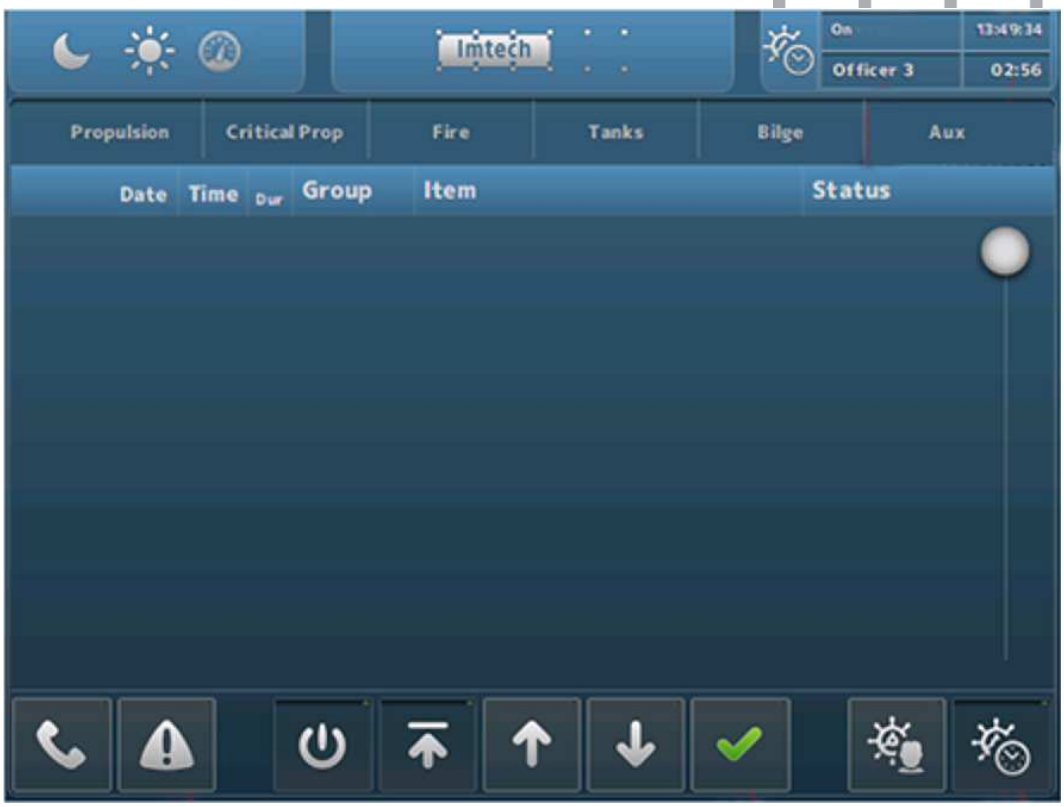


Figure 2-5: Typical DAP screen

2.4.1 Extra buttons alarm mimic

Depending if the station is set as a specific alarm station, some extra buttons will appear at the bottom of the alarm mimic. When the OWS is set-up as a bridge station, the icons as shown in Figure 2-6 will appear. When the OWS is set-up as an ER station, the icons as shown in Figure 2-7 will appear.

Figure 2-6: Bridge set-up icons

Figure 2-7: ER set-up icons

The meaning and handling of these icons are explained in the following table.

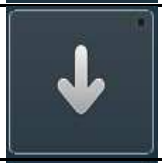
Button	Explanation
	Press to print (part of) the alarm list
	Press and select space or crewmember to call
	Switch station On/Off (when applicable)
	Scroll to top
	Scroll up
	Scroll down
	Acknowledge or silence alarms
	Select crew for Bridge duty
	Switch BNWAS On/Off
	Select crew for ER duty
	Switch personnel alarm On/Off

Table 7: Alarm mimic set-up icons

The *Call* and *Duty Select* buttons have some additional choices, depending on who you can call or who you can select for duty. This will be configured upfront and will look as in Figure 2-8 and Figure 2-9. First select the *Call* or *Duty Select* button and then choose from the following menu.

Figure 2-8: Call function

Figure 2-9: Duty select function

Additionally, you can see the station that is calling you on the main screen (while hearing a buzzer tone if available). You can click on the message to make it disappear (see Figure 2-10).

The person that is on duty will be visible on all stations in the right upper corner of the screen.

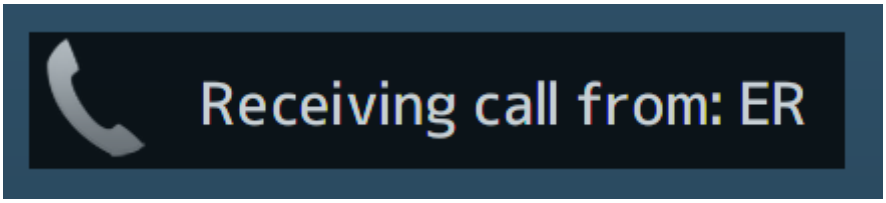


Figure 2-10: receiving call message

Finally in the upper right corner of the alarm mimic some crew and time information will be shown (see Figure 2-11). Here you can see if the ER is attended or unattended, who is on duty, the time and the timer (remaining time) from either the ER Personnel alarm or the BNWAS alarm.

The left button is the reset button for the timer. The right button is the same as the button *Switch station On/Off*.

Figure 2-11: Crew information

2.4.2 Duty alarm principal

The duty alarm system is used for the transfer of alarms to the technical crew in case of an unattended machinery space. The duty alarm system will be configured from a particular OWS. The duty alarm system provides unambiguous audio visual annunciation of alarms and warnings via a dedicated banner located at the top of the alarm panel screen.
A watch and call system extends the central alarm system to engineers' cabins and public areas when machinery spaces/control rooms are unattended.

2.4.3 Alarm types

2.4.3.1 Alarm detection for analogue signals

The following functions are included:

- Instrument failure alarms
- Low-low process alarms with or without action (slow-down)
- Low process alarms
- High process alarms
- High-high process alarms with or without action (slow-down)
- Return to normal detection with dead-band to avoid alarm fluctuations
- Adjustable filter factors to filter fluctuations in the incoming signals
- Time delay of alarm triggering and return to normal messages.

2.4.3.2 Alarm detection for on/off (two state) signals

The following functions are included:

- High process alarms
- Return to normal detection
- Time delay of alarm triggering and return to normal messages.

2.4.3.3 Alarm detection for on/off signals with line check

The following functions are included:

- High process alarms (open or closed)
- Line broken alarm
- Line short alarm
- Return to normal detection
- Time delay of alarm triggering and return to normal messages.

2.4.4 Attended alarm mode

NavVision will transfer the alarm to the activated location.
In case of an attended or manned machinery space this location will be the:

- Engine Control Room (ECR)
- Accommodations (e.g. mess room and public areas).

2.4.5 Unattended alarm mode

In case the machinery space is left “unmanned”, alarms that will come in will be redirected immediately to the selected Duty Alarm Panel.

The “Unattended” mode can be activated on the workstation in de ER or the ECR.

NavVision will direct the alarm to the activated location.
In case of an unattended or unmanned machinery space this will be:

- The engineer on-duty
- Engine Control Room (ECR)
- Accommodations (e.g. mess room and public areas).

New alarms are indicated respectively on the DAP of the engineer on duty in the ER and in public spaces such as the mess room. On the panels, the alarm sounding (horn/buzzer) can be silenced (only local), but the alarms still need to be acknowledged on the OWS within the relevant technical area.

If alarms are not acknowledged within a specific period of time, the *General Engineers Alarm* (GEA) is invoked, independent from the *Attended/Unattended* mode. Once the GEA goes off, the alarm will sound on all alarm stations

2.4.6 How to acknowledge an alarm

The alarms must be acknowledged on the OWS in the Engine (Control) Room by means of:

- Double clicking the corresponding alarm line (alarm viewer)
- Click the Silence/Acknowledge button

2.4.7 How to silence an alarm (not at ECR)

You can silence an alarm on all other locations (except GEA and Fire alarms).
This will silence the local alarm buzzer for 3 minutes, but will not acknowledge the alarm.
The engineer is required to go to the Engine (Control) Room to acknowledge the alarm.

2.4.8 When will an alarm disappear

An alarm will disappear only when rectified AND acknowledged. Acknowledged alarms will show in the normal instrument colour.

3. Personnel alarm

3.1 Engineer Deadman

3.1.1 Scope

The purpose of an Engineer Deadman System is to monitor engine room activity and detect engineer disability which could lead to marine accidents. The system monitors the awareness of the *engineer on duty* and automatically alerts another qualified engineer if for any reason the engineer on duty becomes incapable of performing his duties. This purpose is achieved by a series of indications and alarms to alert first the engineer on duty and, if he does not respond, then to alert another qualified engineer by means of a general alarm.

Additionally, the Engineer Deadman System may provide the engineer on duty with a means of calling for immediate assistance if required. The Engineer Deadman System should be operational whenever the engine room is attended and/or manned, unless inhibited by the Chief Engineer.

3.1.2 The Engineer Deadman System incorporates the following operational modes:

- Manual ON (In operation when engine room is attended)
- Manual OFF (Does not operate under any circumstances)

The Deadman timer can only be switched on or off by inserting a password. This to prevent illicit usage of the Deadman timer (see Figure 3-1). Fill in the password and press enter, or the green checkmark to engage. The red "X" is to return.

Figure 3-1: Password entrance panel

3.1.3 Operational State

Once operational, the alarm system remains dormant for a period of 30 minutes. At the end of this dormant period, the alarm system initiates a visual and audible indication on the AMS.

3.1.4 Reset function

It is not possible to initiate the reset function or cancel any audible alarm from any device, equipment or system not physically located in areas of the engine room or ECR (local silence is allowed).

The reset function is only available in positions in the engine room and ECR. The reset function is easily accessible from the anywhere in the engine room.

The reset function cancels the visual indication and all audible alarms and initiates a further dormant period. If the reset function is activated before the end of the dormant period, the period should be re-initiated to run for its full duration from the time of the reset.

A continuous activation of any reset device triggers the emergency call facility within 3 seconds.

3.1.5 Emergency call facility

Means are provided in the engine room to immediately activate the visual and audible alarm by means of an Emergency Call push button or similar. Holding any reset button for at least 3 seconds also triggers the emergency call facility.

3.2 BNWAS

The BNWAS (Bridge Navigational Watch Alarm System) is a similar personal safety system, designed for use on the bridge.

3.2.1 Introduction

It is possible that you use the BNWAS as a standalone version, but it can also be used in conjunction with the UniMACS bridge. It can even be used with other bridge systems as long as these systems give the standard EVE-messages.

In this manual, we will address both ways in the same explanation since their differences are mainly HMI-related and do not affect functionality.
When we discuss the interface of the BNWAS system, it can be the interface on the standalone BNWAS or on the integrated BNWAS. It can be the interface on the bridge-panel, but also the interface on the panel in the captain's cabin. What follows is an integral explanation of the BNWAS functionality.

3.2.2 The HMI overview

The HMI consists of a main screen that holds all functionality for the BNWAS and a setup-screen that can be used to enter the necessary settings. In the following figures, we will explain the functionality and functions on the HMI.

Figure 3-2: Main BNWAS HMI

3.2.3 The HMI explained

The functions of the HMI are described in the following figures. These are mostly self-explanatory. Where not explicitly clear, an additional explanation is given.

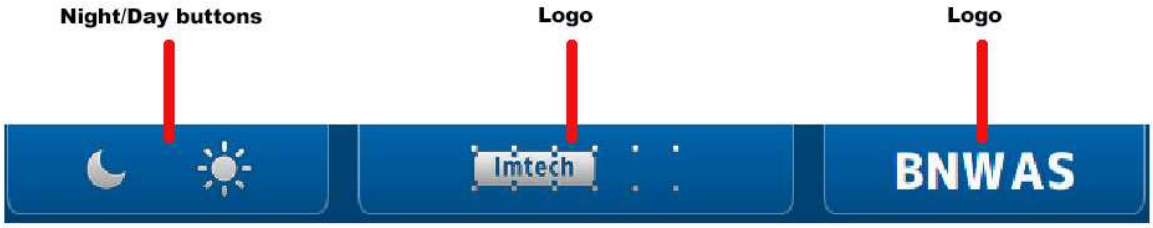


Figure 3-3: HMI top bar

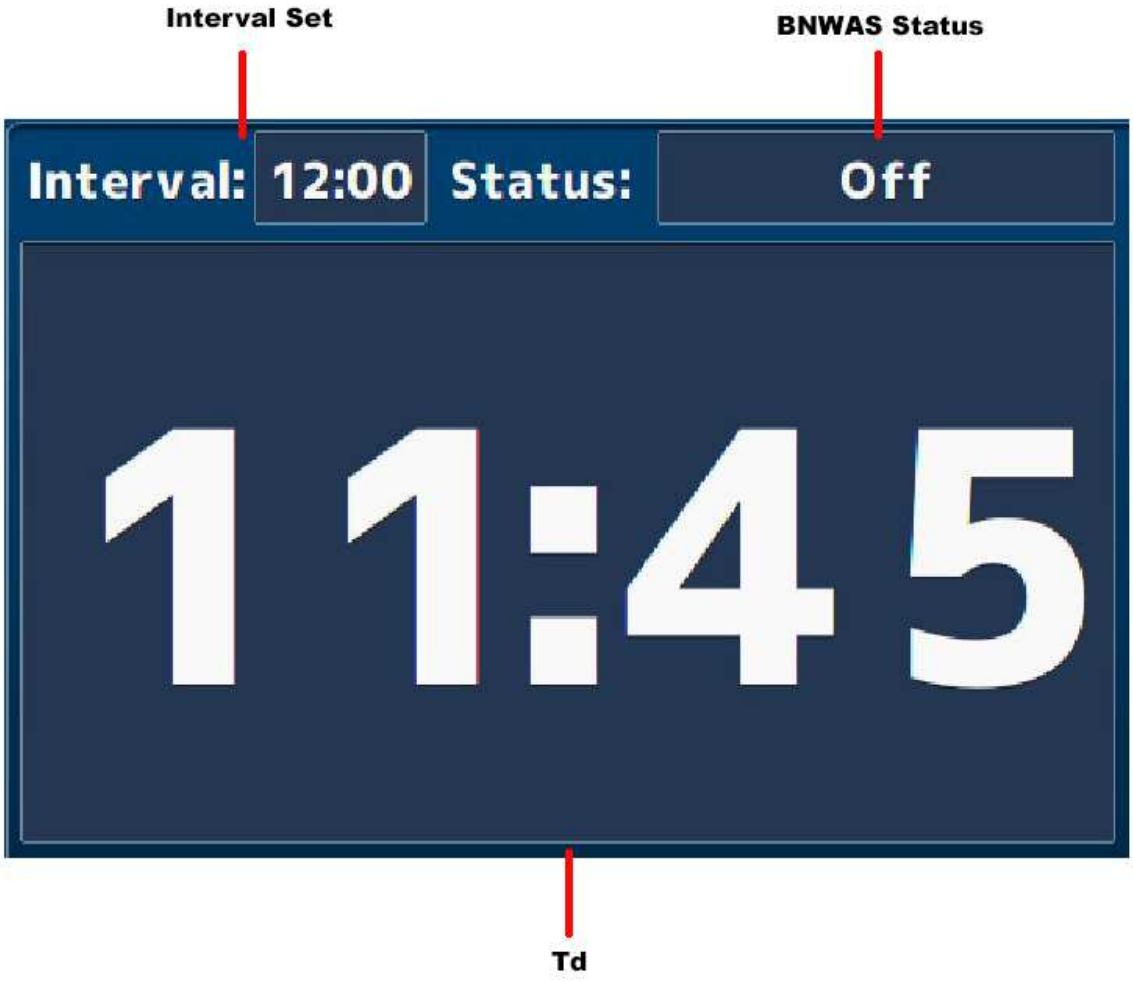


Figure 3-4: HMI main screen

Figure 3-5: HMI bottom bar

The reset timer and emergency call buttons are only available when the panel is placed on the bridge. Any other location will show these buttons, but they will not be operational.

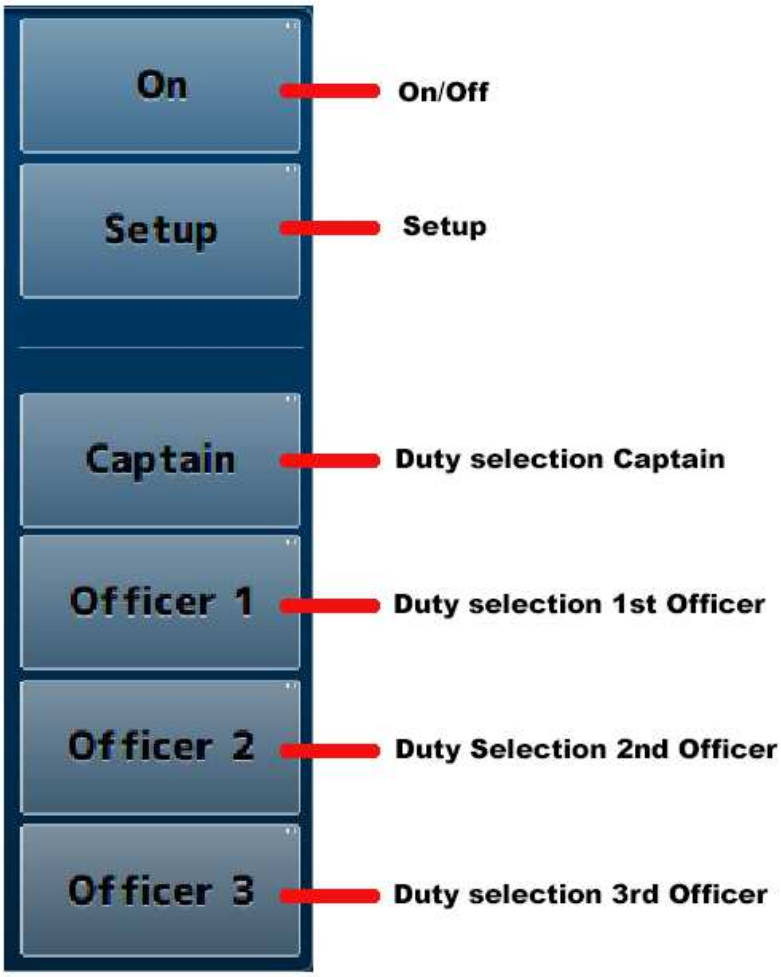


Figure 3-6: HMI Panel

When you operate the On/Off *or* Setup *button a keypad will appear where you have to type a passcode. (See* Figure 3-8*).*

3.2.4 The setup page

By clicking on the setup button a new screen will appear. This is the setup screen. It looks quite the same as the main window as it has only a few settings in the main panel (see Figure 3-9).

Figure 3-7: Setup screen

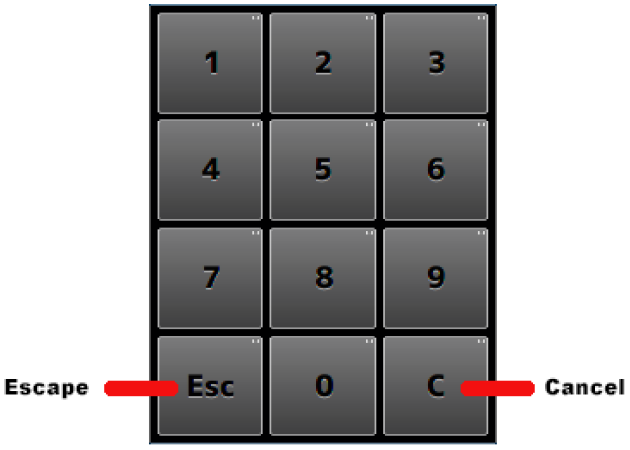


Figure 3-8: Keypad

The functions, with their respective explanation, are shown in the following figure.

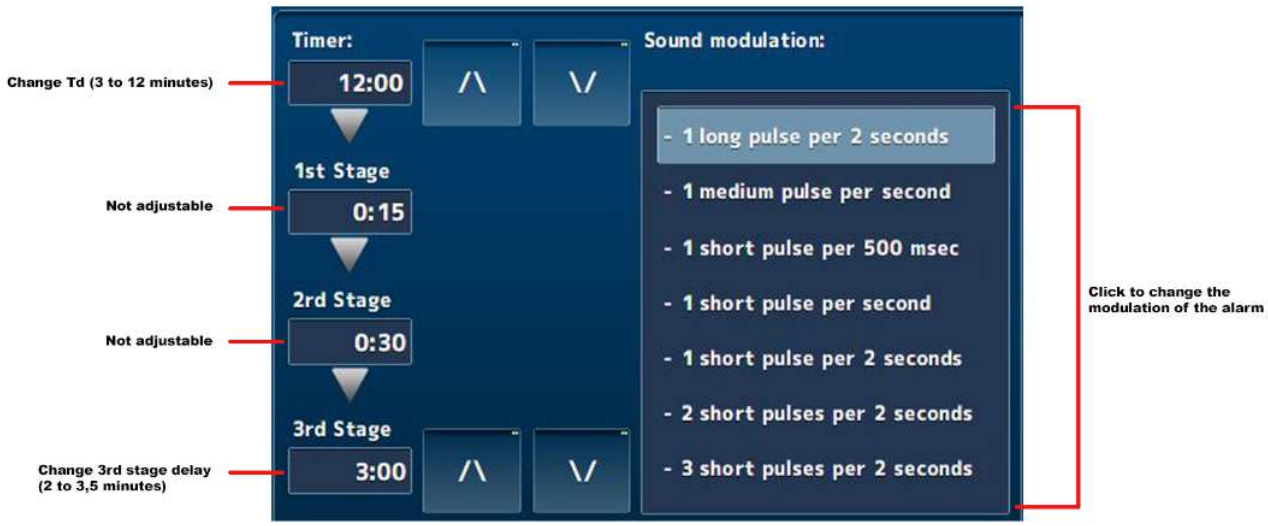


Figure 3-9: Setup main screen

With the arrow buttons in the setup page, you can increase or decrease the Td and/or 3rd stage delay time.

Once a working NavVision server is connected to the same system, the HMI of NavVision will be overwritten on the DAP's. It is just the HMI. The BNWAS will still be the one that handles all the BNWAS features.

It will look as in the following figure:

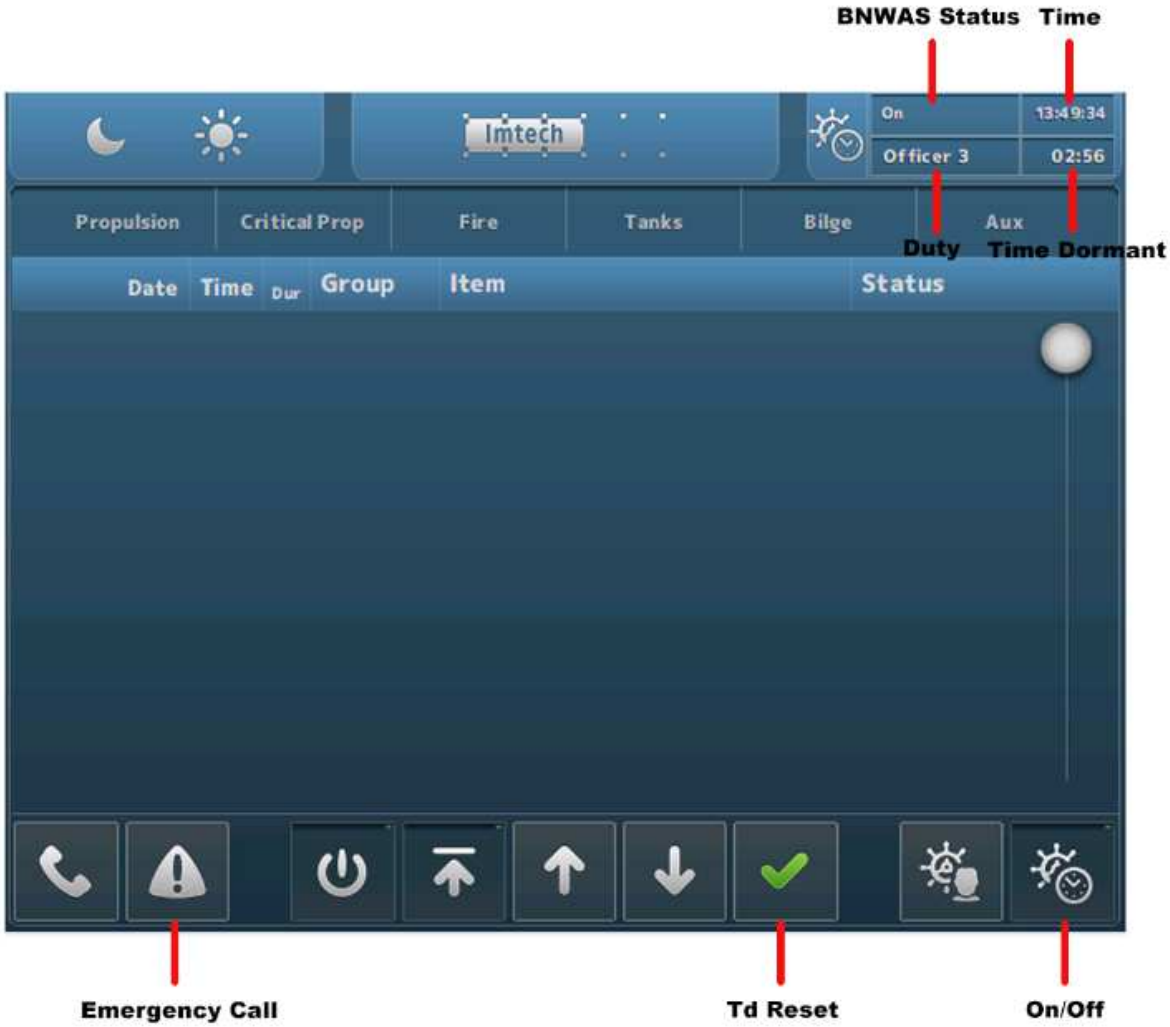


Figure 3-10: NavVision HMI on DAP

On the NavVision server, you will have an equal kind of display as shown in the following figure.

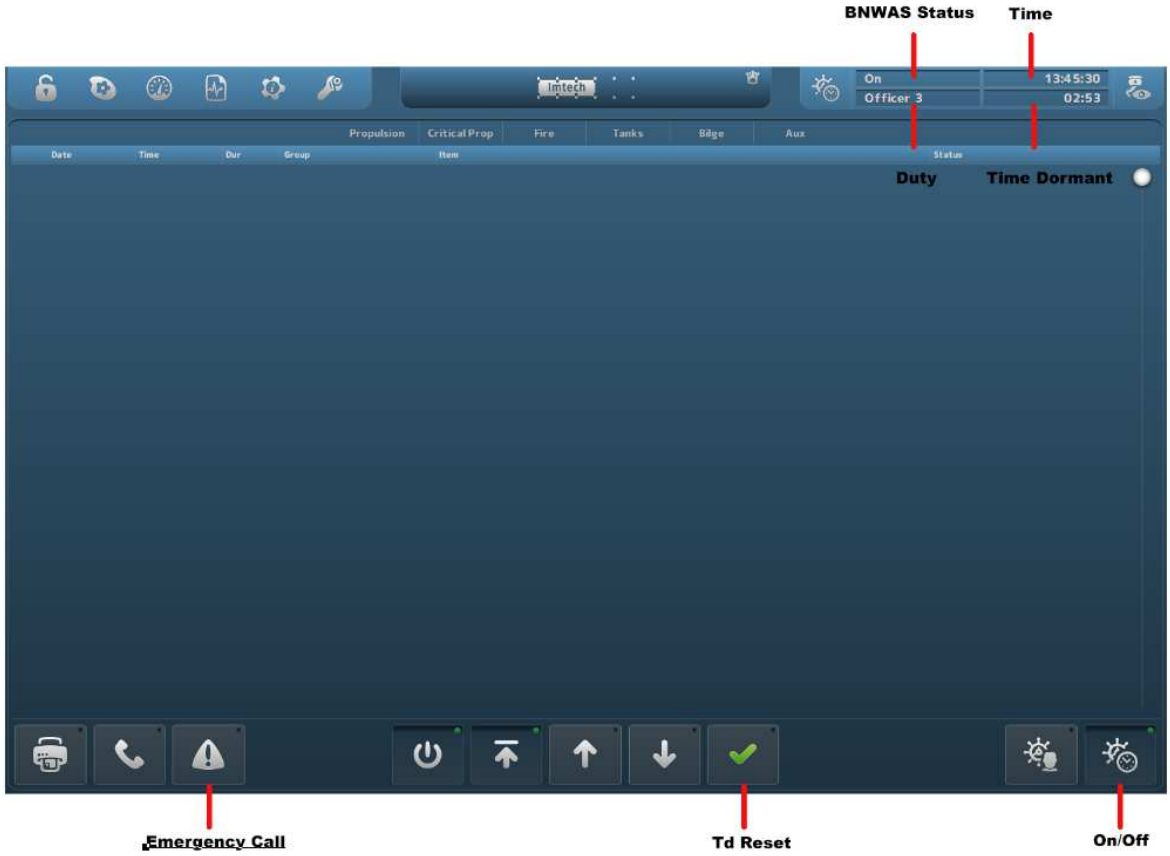


Figure 3-11: NavVision Native screen

4. Annex 1 Mimic control

Control elements are used to interface a wide range of *Control* devices like pumps, fans, valves, generators, etc. via their relevant starter unit. Since these element types are suitable to process a wide range of components, several symbols are defined to represent each type. Color animation is used to show the actual element status.
Chevrons, a single filled chevron (arrow) for low - and a double filled chevron (arrow) for high speed, show the difference between a control element running at high speed and a control element running at low speed. Chevrons without filling indicate an off condition.

4.1 Mimic components

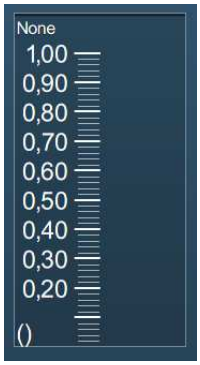
The mimic contains a lot of components which, together, make up for the representation of the ship or a specific system on the ship. Components can be some of the following different forms:

Label

Icon

Value

Button



Horizontal Level

Vertical Level

Small Graph

Slider Control

Instrument

Indicator

Propulsion

DP View

Joystick

Propulsion

All values shown in a value box, A graph or a bar will alter in color depending on the state they are in. So with warnings it will turn amber and with critical alarms it will turn red.

4.2 Component behaviour

Each component can have its own behaviour. Sometimes it is just representing a value and sometimes there is some extra functionality available. The following examples will give you an idea of some of the possibilities.

Figure 4-1: Pop-up balloon

When you double-click on a value, a balloon will pop up with some additional information (see Figure 4-1).

Figure 4-2: control doughnut

When you click on items that you can control, a radial menu will appear. Depending on the element and its settings, you can control different aspects of the item (see Figure 4-2). For the control elements, see Table 8, Table 10, Table 11 and Table 12.

Figure 4-3: Vertical bar with alarm lines

In the vertical bars (often used for tanks) you can see the warning and critical alarm levels. The critical alarm levels (red) are not changeable since these are mandated by class. The warnings (orange) can be changed by dragging the lines with your mouse on the little dot at the end of the line. This way, you can use it for example when filling a tank. You get a warning (visual and audible) when the warning line is crossed.

Figure 4-4: Edit keyboard

When you have an *edit-enabled* value, you can click on it and a keyboard will appear (see Figure 4-4). You can fill in an amount and press enter to change the desired value. It will not be possible to change it beyond the min/max values.

Status	Control element	Symbol
Operable in two speeds, system off	Double chevron (no fill)	
Operable in two speeds, system running at low speed	Double chevron (single chevron filled)	
Operable in two speeds, system running at high speed	Double chevron (double chevron filled)	
Operation is disabled (local control only or controlled by other OPC)	Padlock	
Manual operation (controlled remotely)	Hand	
Automatic operation (controlled by ACS[i])	Chip	

Table 8: Control element status

Colour	Description
Grey	Control element off (stopped), device is ok
Green	Control element on (running), device is ok
Orange	Control element in warning condition
Purple	Control element defective
Red	Control element in alarm condition

Pump and generator control elements

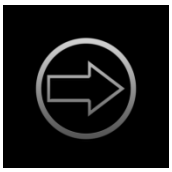
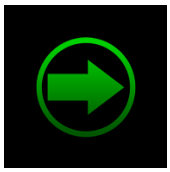
Centrifugal pump	Piston pump	Generator	Status description
			Off
			On (condition ok)
			On, warning condition
			On, defective condition
			On, critical condition

Table 9: Control elements and color animation

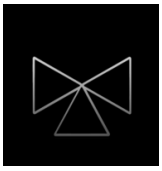
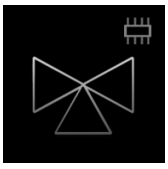
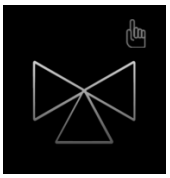
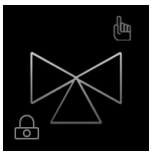
3-way valve OFF	Status description	3-way valve ON	Status description
	3-Way valve off (status indication only)		3-Way valve on (status indication only)
	3-Way valve off, auto (control by AMCS[ii])		3-Way valve on, auto (control by AMCS)
	3-Way valve off, auto (local control)		3-Way valve on, auto (local control)
	3-Way valve off (local control)		3-Way valve on (local control)
	3-Way valve off, manual (controlled by AMCS)		3-Way valve on, manual (controlled by AMCS)
	3-Way valve off, manual (local control)		3-Way valve on, manual (local control)

Table 10: Control elements with status indication

	Centrifugal pump on, operable in two speeds, system off
	Centrifugal pump on, operable in two speeds, pump running at low speed
	Centrifugal pump on, operable in two speeds, pump running at high speed

Table 11: Control elements with speed indication

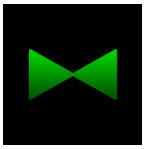
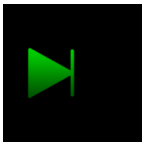
		Fan off & on
		2-way valve off & on
		Check valve off & on

Table 12: Other control elements