

NAVIGATION LIGHT CONTROL SYSTEM

OPERATOR GUIDE

MEGA-GUARD E-Series

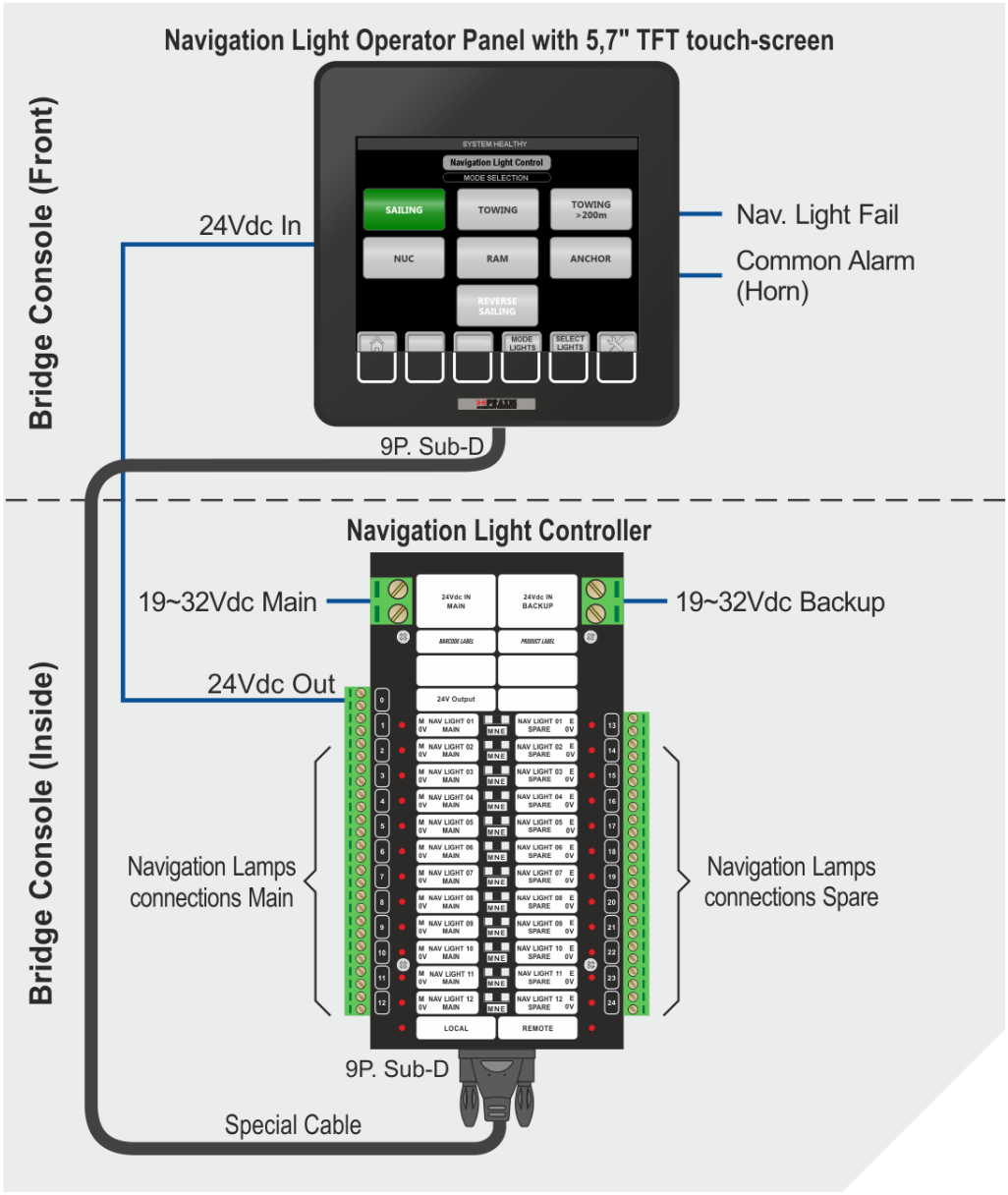
Ship Automation and Navigation System

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2 OVERVIEW

2.1 Navigation Light Control System Overview Drawing



2.2 Installation instructions

To meet class requirements, the Navigation light module must be mounted in such a way that the I/O board can be reached without the need of tools.

3 Operating Instructions

3.1 Functional overview

The Navigation Light Control System with a Navigation Lights panel controls up to 12 lamps (one IO module), each lamp having a Main output and a Spare output. If second IO Module is connected, then up to 14 lamps can be controlled with Navigation Lights panel.

The Navigation Light Control System consists of two types of modules which are inter-connected by an IO cable:

- 5,7" TFT operator panel, which is flush mounted in console and contains six hardware buttons and a 5.7" TFT touch screen.
- Navigation Light IO Module(s), which is DIN rail mounted inside console, and contains the connection terminals to the lamps and connection to the main and back-up supply. The Navigation Light IO Module can handle both bulb and LED type lamp.

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The 5,7" TFT operator panel measurements are: 144 x 144 mm. The rear of the unit is equipped with detachable terminal strips for field wiring. An address resistor (XP33 – 99.8.833) should be inserted in the intended detachable connection strip. Up to 8 groups can be made for easy enabling or disabling light groups. For instance, a sailing group, a towing group, an anchor group, etcetera. The panel has 6 buttons for system functions as page navigation, buzzer silencing, alarm acknowledge and dimming.
On the touch screen lamp status information is displayed on a schematic drawing of the mast layout. It is easy to see which lamps are enabled and where they are placed. Via the touchscreen lamps can be switched individually by clicking on the lamp symbols.
Via the group (or mode) buttons a group can be selected or deselected. Note that the group is reset if an individual lamp is switched on or off.
Last alarm is shown on the top of the default page and on the alarm page. The operator panel is equipped with a buzzer that is activated on every new alarm.

The Navigation Light Control System with a 5,7" TFT operator panel can control 2 modules (or 24 lamps). Each module has 12 channels, each channel has a main output and a spare output.

– For 5,7" TFT operator panels, 8 groups can be configured by adding or subtracting lamps in the menu of the panel (password protected). Group names and names for individual lamps can be changed in the settings.

When the 5,7" TFT operator panel is not in normal operation or the I/O-Cable is disconnected, an alarm message will be displayed on the screen, the buzzer will sound, the Remote LED on the IO Module is deactivated and the Local LED on the IO Module is activated.

Now the navigation lamps can be switched on using the manual switches present on the front of the IO Module. The Main lamp is activated when pressing the switch on the left position and the Spare lamp is activated when pressing the switch on the right position.

> The manual switches always override the commands received from the TFT operator panel, even in remote mode. This means that the manual switches must be put in the neutral position when remotely controlled by the TFT operator panel.

3.2 Mast page

The default page shows the overview drawing of the mast. The locations of the lamps are presented schematically. Lamps are drawn as two squares, main on top and spare or backup lamps below. When a lamp is activated, the colour of the lamp is highlighted. When a lamp is unavailable, a red cross is displayed and a new alarm message will appear. Also, the internal buzzer of the 5,7" operator TFT panel will sound. Automatically the operator panel will try to activate the backup lamp.

On the mast page individual lamps can be switched on and off by clicking on the lamp symbols. Via the group (or mode) buttons a group can be selected or deselected. Note that the group is reset if an individual lamp is switched on or off

When a group button is pressed during normal operation:

- If the group is not activated: all lamps in the group will be activated, and the group indicator will be highlighted.
    - When an operator wants to activate other lamps as well which are not in this group, he can do so by pressing the corresponding individual lamp button.
    - When an operator wants to deactivate lamps in the group; he can do so by pressing the corresponding individual lamp button.
- Note that in both cases the group is reset as the configuration is no longer that of the previous selected group.

3.3 Mode or Group page

Depending on the preference of the crew another main page can be selected, the mode page.

In this view the six groups are displayed as big buttons. The active group is displayed in green colour. The function of the groups is identical as on the mast page.

3.4 Alarm Page

Once an alarm appears (main- or backup power loss / main- or spare lamp fail), the latest alarm line will appear on the default screen and on the Alarm Page. The horn will sound. The horn can be stopped from the default page by pressing the Stop Horn-button. Stopping the horn will not

acknowledge the alarm. The alarm should always be acknowledged on the Alarm Page. Therefore, go to the Alarm Page by pressing the Alarm Page-button.

Now you see a list with all current alarms. Unacknowledged alarm lines blink and are always on top the screen. You can scroll through the alarm list using the Scroll Up and Scroll Down-buttons. You can acknowledge all visible unacknowledged alarms by pressing the Acknowledge-button. You can also stop the horn on the Alarm Page.

You can return to the default page by pressing the Home-button.

Lamp failure alarms (main or backup) are generated by the IO-module through measuring the current therefore they can only be reset by switching on the lamp (ea. Lamp test).

Some examples of alarm lines that could occur:
MAIN LAMP 1 <Description> FAIL
BACKUP LAMP 4 <Description> FAIL
MAIN SUPPLY FAILURE
BACK-UP SUPPLY FAILURE
LOST CONNECTION WITH IO-MODULE 1
XP21- ETHERNET PORT A NO COMMUNICATION

3.5 Dimming

You can adjust the backlight of the TFT screen for best visibility and to avoid blinding (for instance during night time).

You can press  to adjust the brightness of the screen. Class rules prevent brightness to be set to 0.

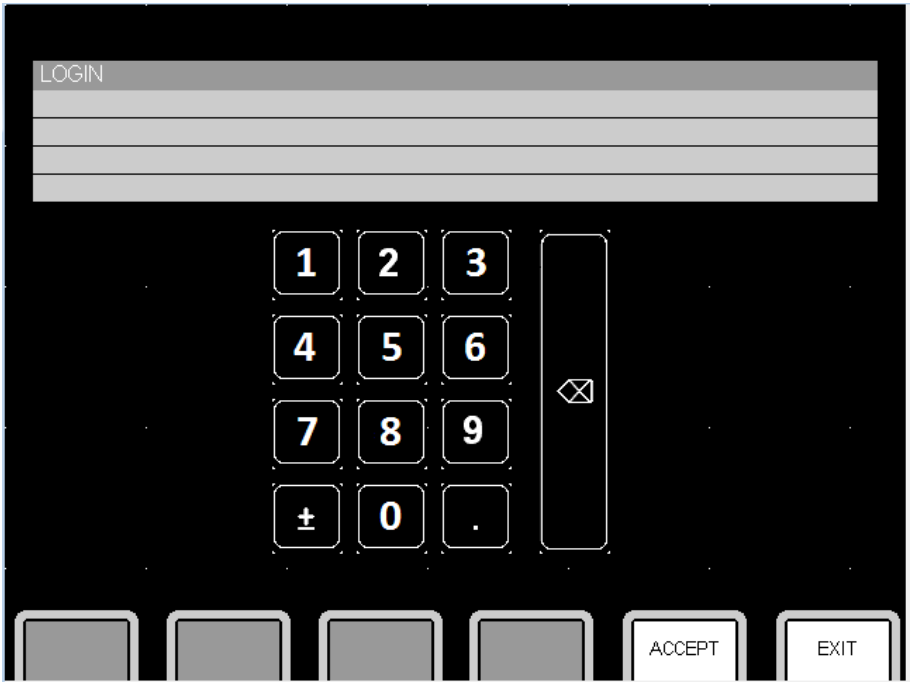
4 Setting up the system

As the navigation light Control System is designed as a generic system that will accommodate for the majority of standard mast lay-outs, the system comes with a number of parameters to fit the specific mast.
To do this the parameters must be set once at installation. For this you must login to the menu pages.

4.1 Login

On the main page press the button

 to enter the login page.



After entering the right password you will go into the menu pages.

4.2 Menu Page

In the menu pages in this you can:

- Make changes to the lamp configuration (enable or disable main and/or spare lamp inputs)
- Set the (display) colour of a lamp.
- Connect a position on the default mast page to lamps.
- Reset the hour counters and enter the max lifetime of the lamps.
- Add or remove lamps from groups

For this the following menus can be found:

1. General
2. Lamps in use
3. Lamp colour
4. Lamp to mast position
5. Group codes
6. Life time

Scroll to the desired submenu by pressing the arrow down or arrow up buttons and press Accept to enter. You can return to the default page by pressing the exit button.

In every sub menu you can scroll down and up to the desired parameter and press accept. Now you enter the change menu (that looks very simular to the login page). With the numeric keys you can enter the new value, then press accept.
With the exit key you can go one step higer in the menu structure and eventially exit to one of the main pages.

4.2.1 *General*

In the General menu the following settings can be entered:
- Lamp type,
- Inhibit alarms for not connected Ethernet connections,
- Silent mode, not for operational conditions, resets to normal at start-up.

Select the type of lamps by selecting No (bulbs) or Yes (LED's) and press Accept-button to confirm.
As the I/O module can handle both types of lamps this parameter is only used to generate a lifetime alarm for LED lamps.

The panel has 4 Ethernet ports, mostly not all are used. In that case the 'Ethernet port x No communication' alarms can be inhibited (suppressed).

If silent mode is selected the buzzer is suppressed. This will generate an alarm, as it is a not operational condition. At start-up the setting will be reset to normal.

4.2.2 *Lamps in use*

After entering this submenu, 2 new options are presented:

- Main Lamp in use
- Backup lamp in use

Select 'Main lamps in use' to select which lamps in your configuration are used. Do the same for the Backup lamps.
If both main and back-up lamps are in use then the system will activate the back-up lamps automatically if the main lamp fails.

Note that if a lamp is selected to be not in use for main that this setting overrules the setting for the Backup lamp. In other words a lamp cannot be used only as backup lamp.

Note: the setting is 'lamp inhibit' that means that if the lamp is in use the selection must be NO. And if the lamp is not used the setting must be YES.

4.2.3 *Lamp colour*

Here the colour per lamp is selected.

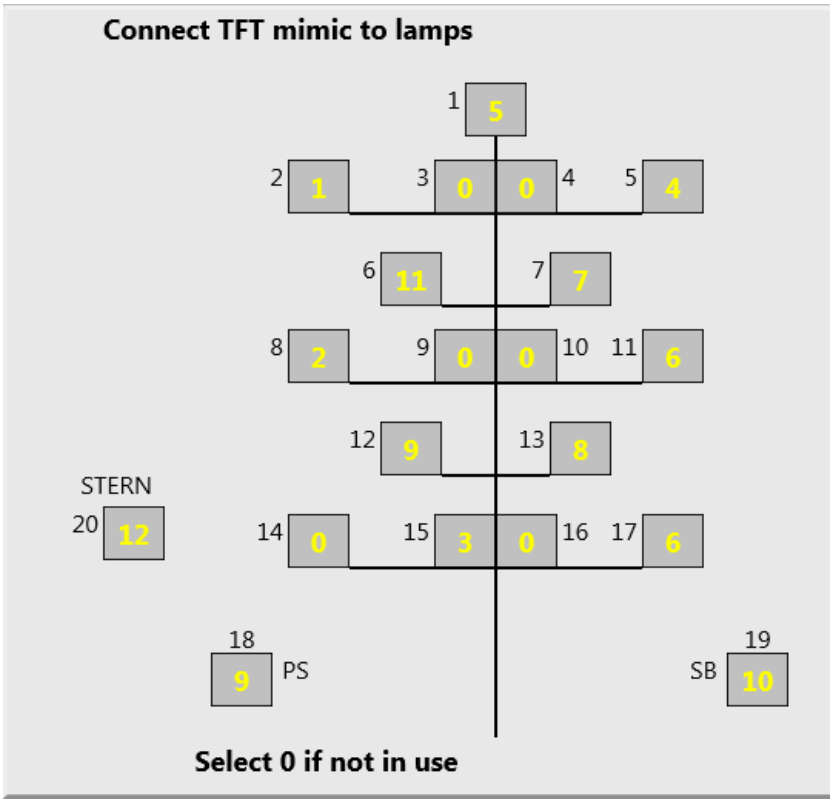
The parameter is an integer number:
0 = White
1 = Red
2 = Green
3 = Yellow.

This setting is used for display on the TFT screen.

4.2.4 *Lamp to mast position*

On the mast view of the TFT screen lamps are displayed on a schematic of the mast layout. To be able to display the right lamps on the right position for every position the lamp number must be entered. Here the lamps on module 1 are from 1 to 12 and on module 2 from 13 to 24.

For standard mast the positions see below picture:
The position is the black number and the lamp number is in yellow



If a position is connected to lamp 0 that position will not be visible on the TFT screen.

In the above example, portside light (position 18) is connected to lamp 9 of first module. (Connector 2 for main and 14 for spare).
Where positions 3, 4, 9, 10, 12, 14 and 16 are not used, lamps on mast view are not visible for these positions.

Note that there are 20 possible positions in the standard mast layout and maximum of 24 lamps (2 modules). For special layouts and back ground additional engineering by Praxis automation is required.

4.2.5 *Group or mode code*

In this menu the lamps per group are selected. The parameter is made of a binary packed number containing the 12 lamps per module. Per group you need a group parameter for both modules.

See table below; if for instance lamp 1, 5 and 7 must be on for a group the code will be:
1 + 16 + 64 = 81

I/O module 1		I/O module 2	
Lamp 1	1	Lamp 13	1
Lamp 2	2	Lamp 14	2
Lamp 3	4	Lamp 15	4
Lamp 4	8	Lamp 16	8
Lamp 5	16	Lamp 17	16
Lamp 6	32	Lamp 18	32
Lamp 7	64	Lamp 19	64
Lamp 8	128	Lamp 20	128
Lamp 9	256	Lamp 21	256
Lamp 10	512	Lamp 22	512
Lamp 11	1024	Lamp 23	1024
Lamp 12	2048	Lamp 24	2048
+	code	+	code

Note that there are 6 groups in the standard layout, if more groups are needed a special layout can be made, then additional Praxis engineering is needed.

4.2.6 *Life time*

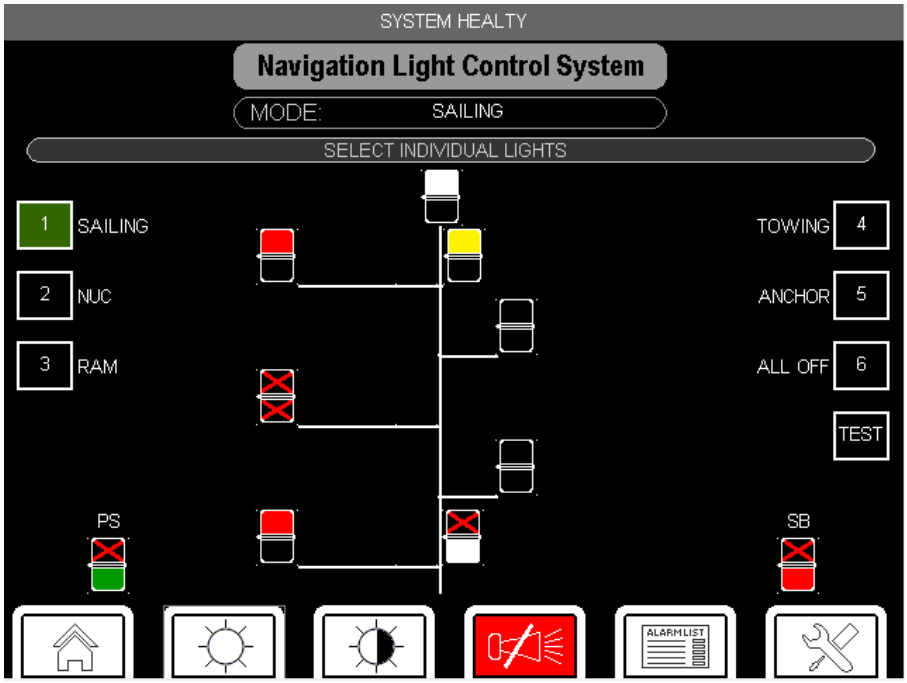
When enter this menu four submenus are presented:
- Reset running hours module 1.
- Reset running hours module 2
- Max life time lamps module 1
- Max life time lamps module 2

After replacement of a lamp the recorded running hours can be reset in this menu. Enter 0 for the running hours of the replaced lamp.

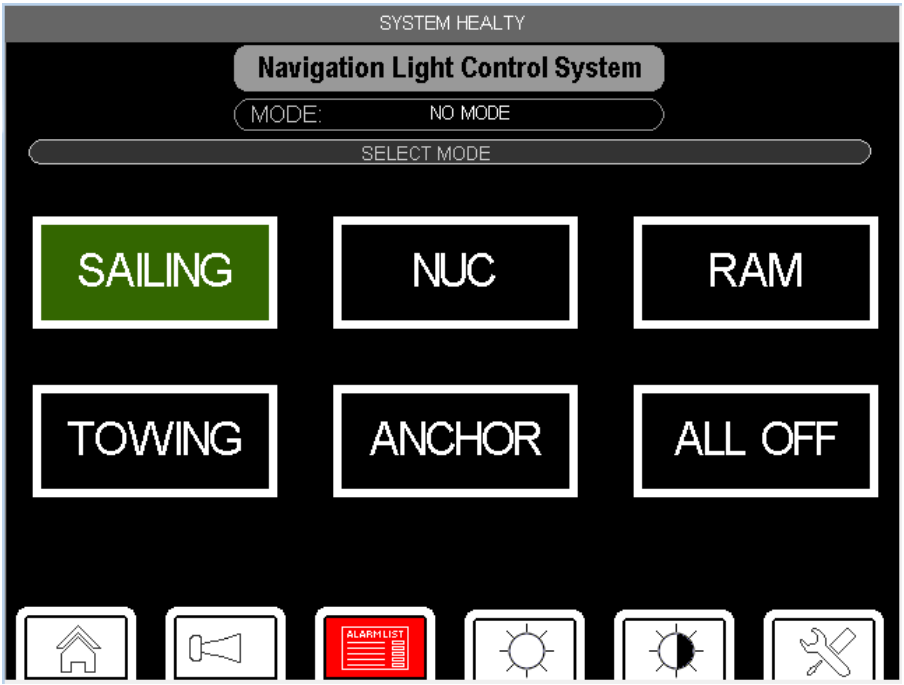
The maximum lifetime for the used lamp can be entered per lamp.

4.3 Screenshots and Symbols

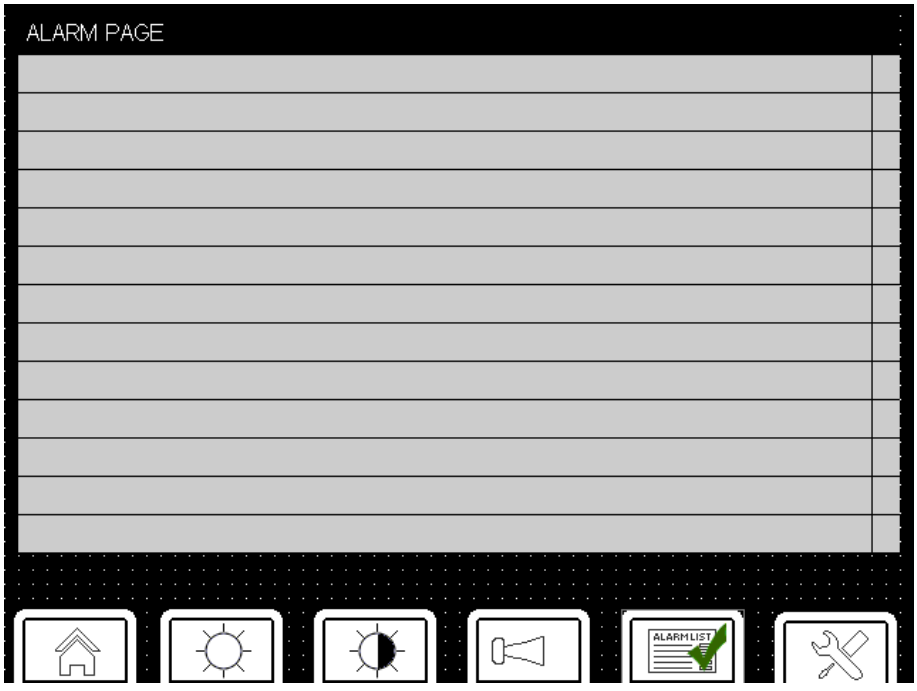
4.3.1 *Mast layout page:*



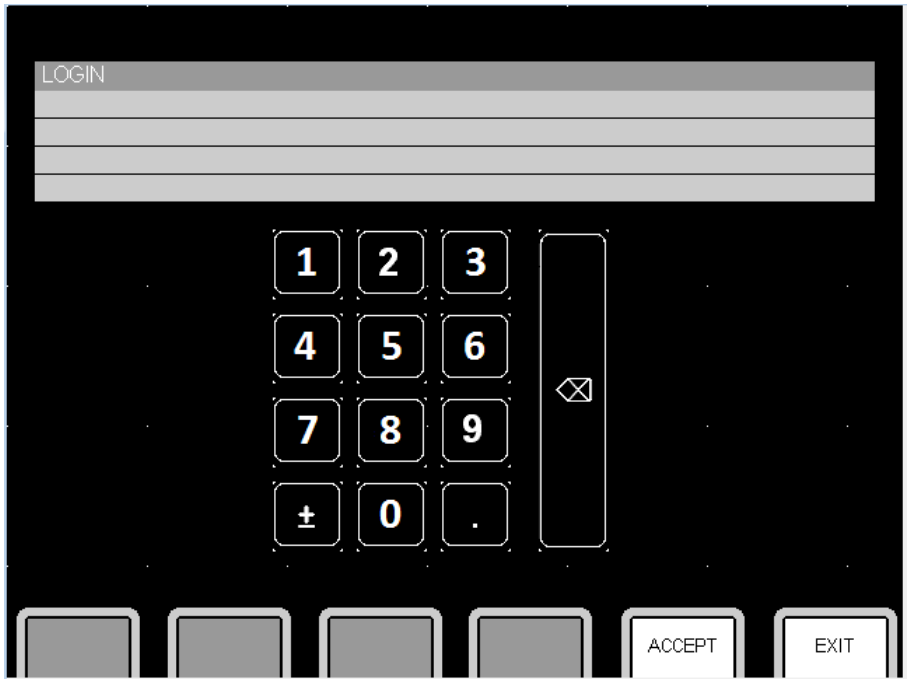
4.3.2 *Mode page*



4.3.3 *Alarm page*



4.3.4 *Login page (simular with change page)*



4.3.5 *Symbols used*

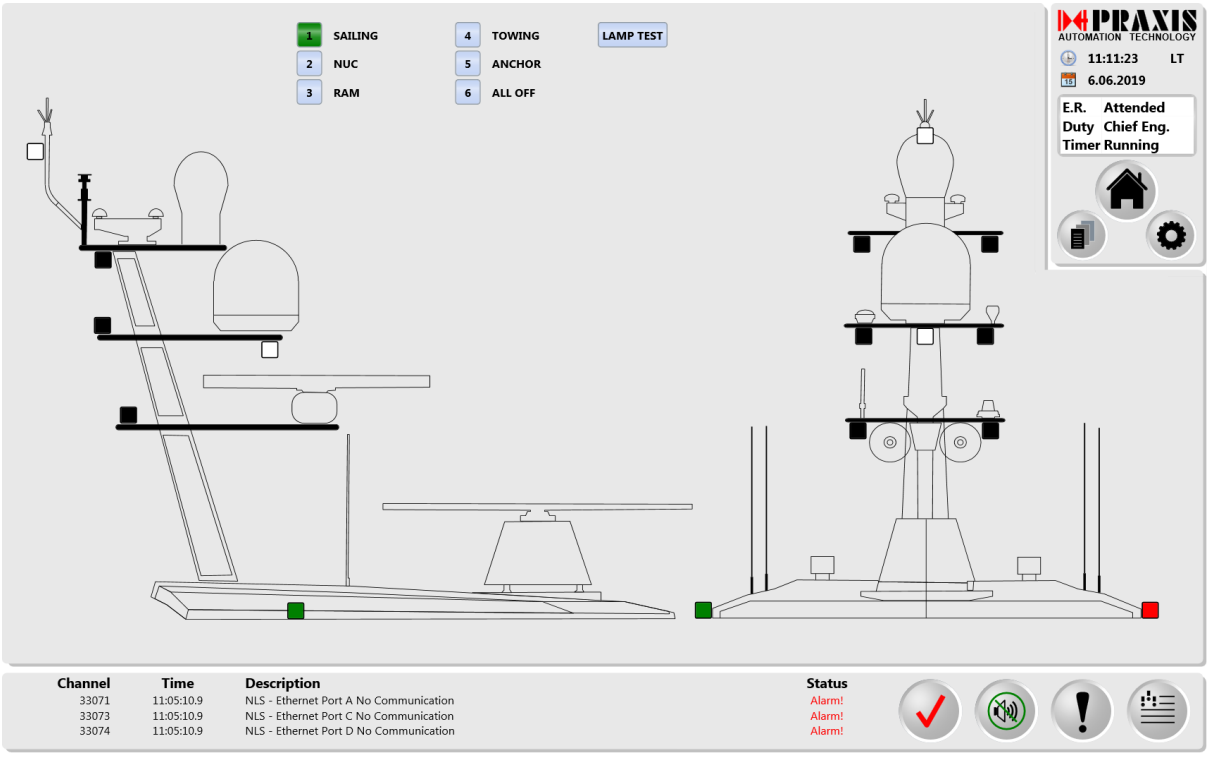
Icon	Explanation
	Home button. Press to go to mast page (or mode page)
	Horn button not active
	Horn button active Press to silence the buzzer
	Alarm page no unacknowledged alarms Press to go to alarm page
	Alarm page with unacknowledged alarms Press to go to alarm page

	Acknowledge Press to acknowledge alarms in view.
	Dimming Press to increase brightness
	Dimming Press to decrease brightness
	Settings Press to go to settings menu
	Navigation lamp Lamp switched off
	Navigation lamp Main lamp switched on
	Navigation lamp Main lamp in failure, backup lamp switched on
	Navigation lamp Both main and backup lamp in failure

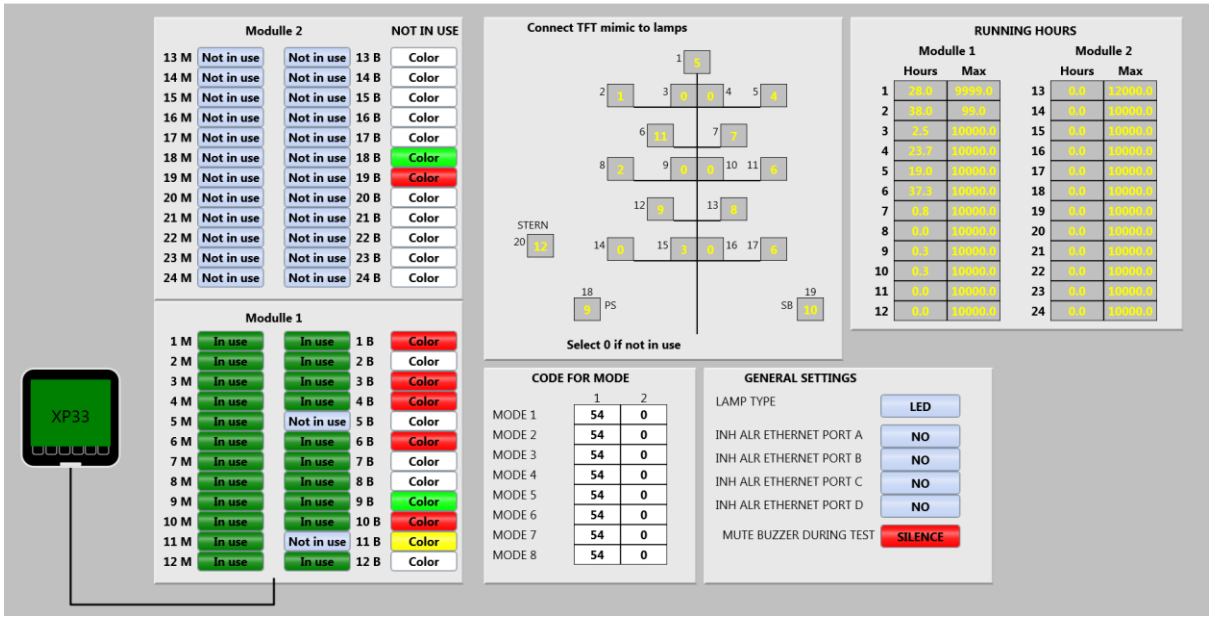
5 Integrated NLC system

The NLCS can be used as a stand-alone system but can also be integrated into a Vessel Management System (VMS). When integrated into a VMS the actual status of the NLCS can be displayed on a mimic of the VMS workstations. Also all alarms are then send to the VMS and processed as engine room or bridge alarms.

See below an example of a NLCS mimic. These mimics are non standard and designed to the actual vessel per project.



To set the parameters of a ingegrated NLCS there will be a (password protected) mimic. On this all settings can be adjusted.



6 Hardware Specifications

6.1 5.7" TFT Panel

General	
Model description	5,7" TFT Panel
Code number	98.0.982.2
Model size	H=144, W=144, D=51mm
Mounting	Flush Panel
Panel cut-out	H=124, W=134mm
Fastening	Mounting set
I/O connections	Detachable screw terminals 2.5mm
Weight	Approx 800 grams
Supply voltage	19-32VDC
Power consumption	15W max
Operating Environment	
Operating temperature	-20 degrees C to +70 degrees C
Test specification	EN60945
Marine class approval	LR, GL, BV, RINA, DNV, ABS
Relay outputs:	
Horn relay output function	At power off or when no alarm condition: - Open contact (horn = off) At power on and when alarm is present: Closed contact (horn = on)
Horn relay output voltage/current	DC : 0 -32VDC / 2A AC: 100-250VAC / 2A
System Fail output function	At power off or in fail condition: - Open contact At power on and no fail condition: - Closed contact
System Fail output voltage/current	DC : 0 -32VDC / 0.5A AC: 100-250VAC / 0.5A

Control Panel	
Design:	Flat
Number of buttons	6
Button description and illumination	Button functionality is shown on the screen
Redundant Ethernet link	
Number of RJ45 Ethernet connectors	4
Communication speed	100MB
Function	Dimming distribution Obtaining setup / software changes Control functionality (optional)

6.2 Navigation Light IO Module

6.2.1 IO Module for LED/Bulb-type lamps

Code number:	98.6.030.804
Model description	IO Module NLCS lamps
Model size	H=200, W=125.4, D=27.9mm
Mounting	DIN rail
Fastening	DIN rail fastening bracket included
I/O connections	Detachable screw terminals 2.5mm
Power supply connections	- 19-32VDC Main supply input - 19-32VDC Backup supply input - 19-32VDC Failsafe output (connected to the Navigation Light Control Panel)
Weight	750 grams
Supply voltage	Dual 19-32VDC (Main and Backup)
Maximum current / power per output:	0.6 A / 15W
Minimal current / power per output:	30mA / 1W
Power consumption	190W max (180W for the lamps + 10W for the Control Panel)
Operating Environment	
Operating temperature	-20 degrees C to +70 degrees C
Test specification	EN60945
Marine class approval	LRS, GL, BV, ABS, DNV, BV, RINA

7 Connection Drawings

Drawings can be divided in two groups:

- Projects drawings; in these drawings the text sheet for navigation light mast is adapted for the particular vessel. These drawings are made by customer. Praxis Automation Technology B.V. can also provide these drawings in case this is specially purchased from Praxis. These drawings are not part of this manual
- Standard drawings; these are standard mounting, dimension and connection drawings which are applicable for all vessels. These drawings are part of this manual.

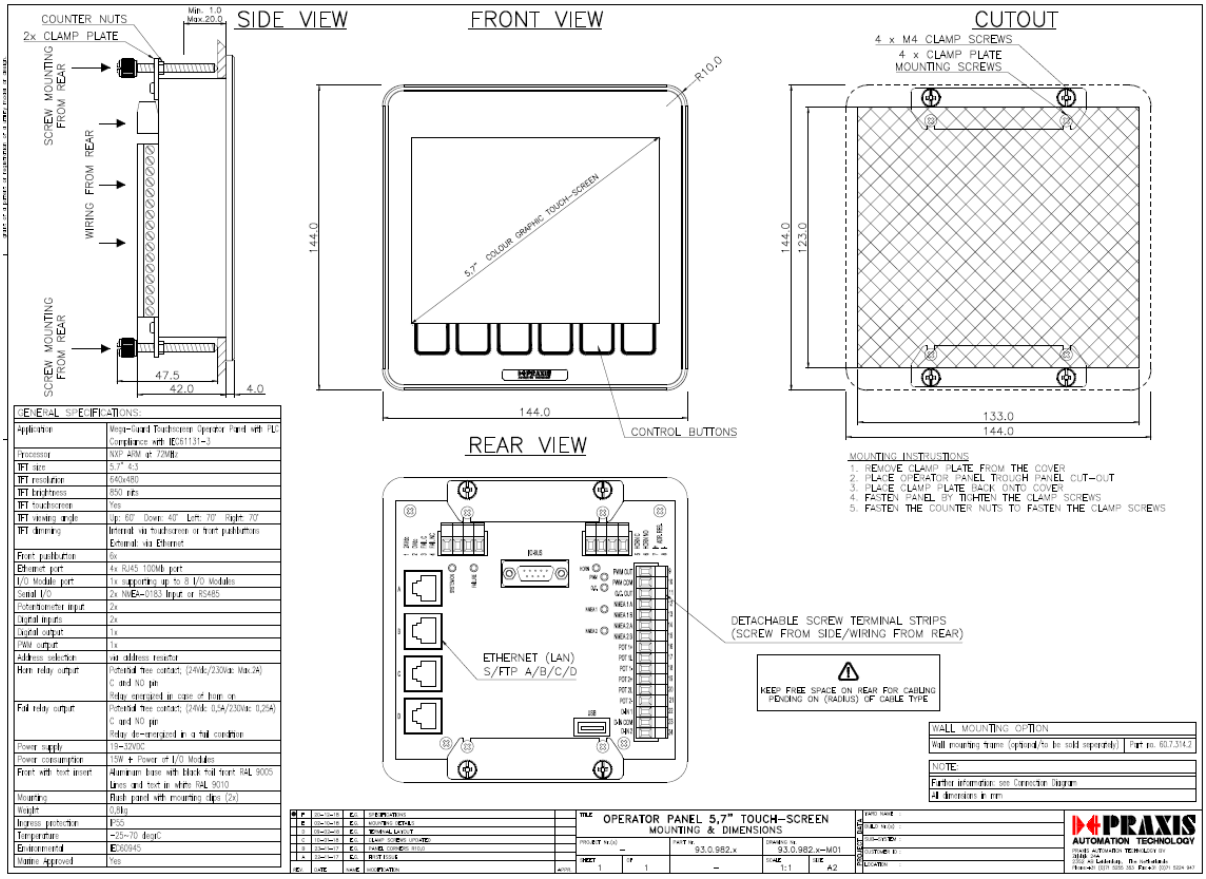
7.1 Project drawings

Please check your project drawing package for examples.

7.2 Standard drawings

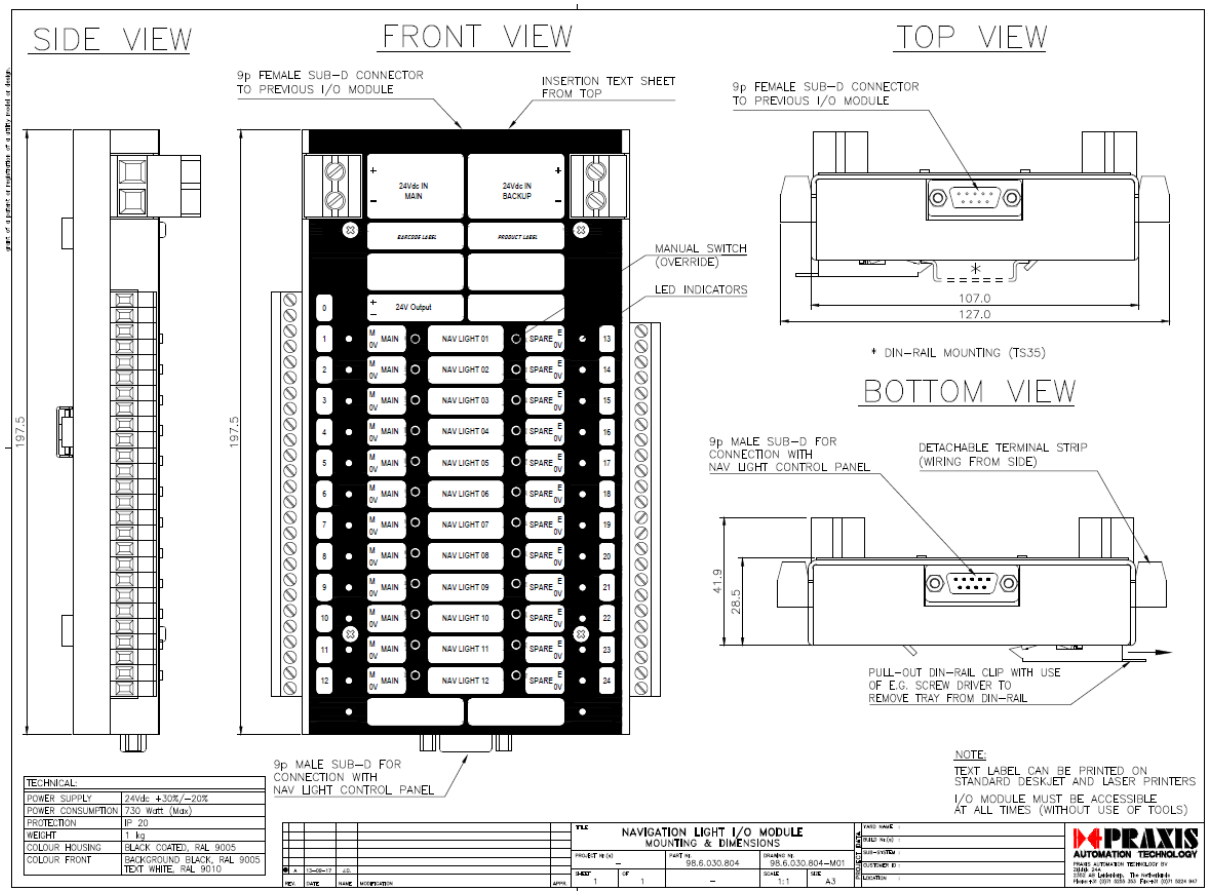
See following pages.

7.2.1 *5,7" TFT Panel*

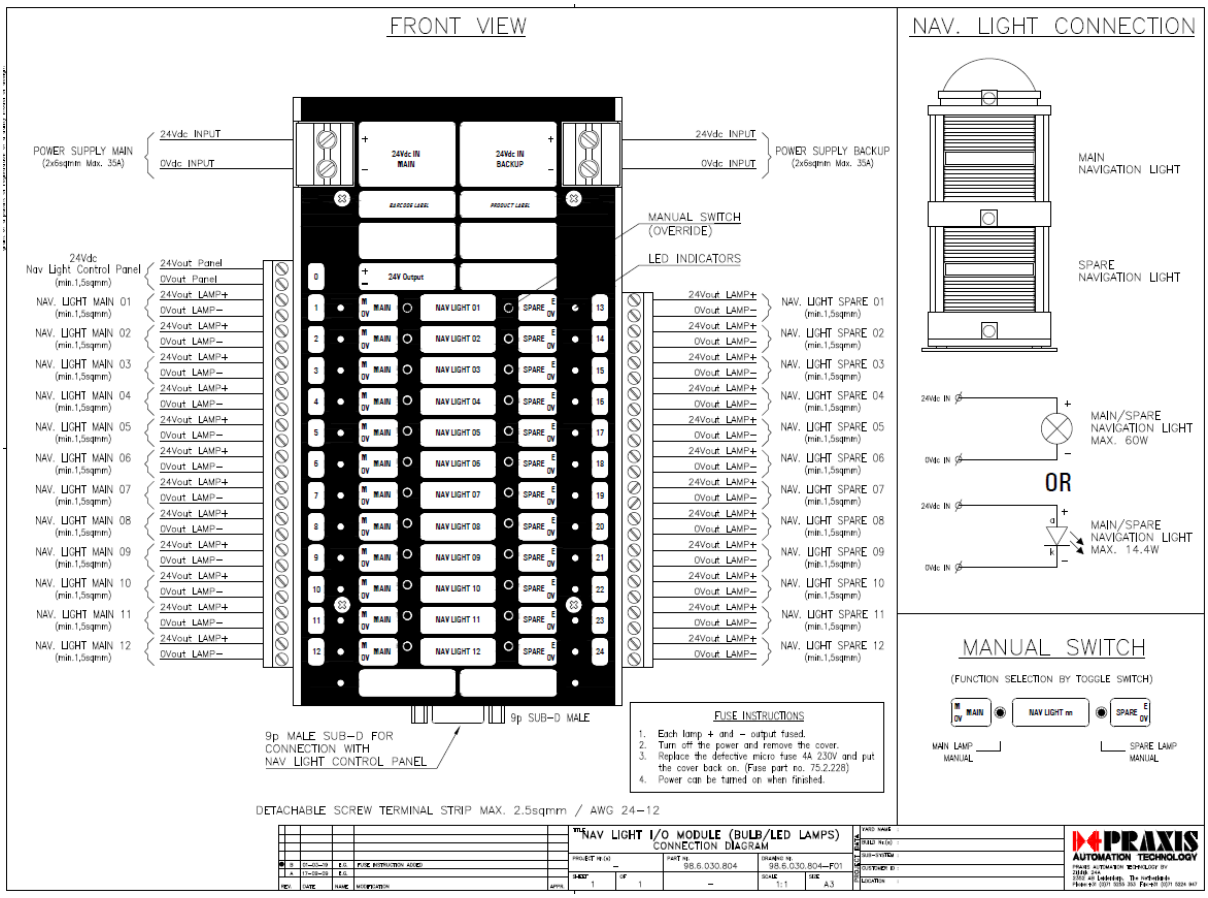


Drawing number: 93.0.982-M01

7.2.2 *Navigation Light IO Module*



Drawing number: 98.6.030.804-M01



Drawing number: 98.6.030.804-F01

8 Mini-Guard, Maxi-Guard and Mega-Guard E-Series

The Navigation Light Control System can be applied in the E-Series of Mini-Guard, Maxi-Guard, and Mega-Guard product line.

9 Naming conventions and company information

Naming Conventions:

Name of the Product Line:	E Series of Mini-Guard, Maxi-Guard, Mega-Guard
Product Name	Navigation Light Control System

Company Information:

Company Name:	Praxis Automation Technology B.V.
Company Address:	Zijldijk 24A
Company Zipcode:	2352 AB
Company City:	Leiderdorp
Company Country:	The Netherlands
Company Phone:	(31) 71-5255353
Company Fax:	(31) 71-5224947
Company E-Mail:	info@praxis-automation.nl
Company website:	Http://www.praxis-automation.nl