

FT NavVision®

Software Installation Manual

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References

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Introduction

The software installation manual provides instructions for adjusting, setting and configuring FT NavVision[®]. The chapters and sections are organized in chronological order in which the relevant component must be installed and configured (where applicable).

About the software installation manual

The software installation manual contains the following chapters:

- Chapter "Safety instructions" presents warning, caution and note information, which the user should pay attention to.
- Chapter "Setting and adjustment" contains instructions on how to set and adjust FT NavVision®
- Chapter "Logbook" contains a detailed description on how registered events are displayed
- Chapter "Duty alarm panel" contains a detailed description and operation of the duty alarm panel.

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Abbreviations list

AC Alternating Current

AI Analog IN AO Analog Out

CAN Controller Area Network

COM Communication

CPU Central Processing Unit
DAP Duty Alarm panel
DC Direct Current

DI Digital In

DIN Deutsches Institut für Normung

DO Digital Out Dead Man's

ECR Engine Control Room

FT Free Technics

GEA General Engineers Alarm

GND Ground

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
Mbps Megabit per second
NC Normally Closed

NMEA National Marine Electronics Association

NO Normally Open

OWS Operator Work Station

PIN Personal Identification Number PLC Programmable Logic Controller

Rx Receive

SMS Short Message Service

SRAM Static Random Access Memory

TCP/IP Transmission Control Protocol/ Internet Protocol

TFT Thin Film Transistor

Tx Transmit

UDP User Datagram Protocol USB Universal Serial Bus

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Safety instructions

NOTE:

This section provides only a summary of the most important safety requirements and notes, which will be mentioned in the individual sections. To protect your health and prevent damage to the devices, 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 essential to emphasize.

CAUTION

An operating procedure, practise or condition etc., which, if not strictly observed, may damage or destroy equipment.

WARNING

An operating procedure, practise or condition etc., which, if not carefully observed may result in personal injury or loss of life.

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1. Setting and adjustment

1.1 General

Under "Tools > Configuration > Serial" the following menus are available;

- COM ports
- Serial LAN ports
- CAN ports
- Overview connected devices.

1.2 COM ports

Under "Tools > Configuration > Serial > COM ports" (see Figure 1-1) all COM ports as found by FT NavVision® become visible. At the first startup they are no COM port yet assigned (i.e. COM port menu does not show any COM port data).



Figure 1-1: COM ports

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1.2.1 COM port assignment

NOTE:

Use the right device interface (protocol) and verify the baudrate etc.

Check the respective wiring schematics to determine the COM port arrangement and assignment. Tick off the relevant COM port (1, 2, 3, etc.) and select the required device interface (protocol) by means of the drop-down menu (see Figure 1-2).

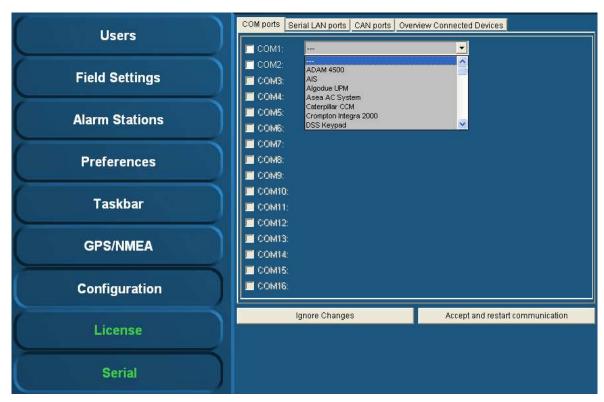


Figure 1-2: Drop-down menu (device interfaces)

At completion, confirm the settings by clicking "Accept and restart communication" (see Figure 1-2).

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Check the appropriate FT NavVision® viewer to verify if the COM-port is correct and if there is any data communication. For example: select the "Video Sounder" viewer (see Figure 1-3) to verify that the device interface (protocol) on "COM1" is correct. Repeat this procedure for all other listed COM ports.

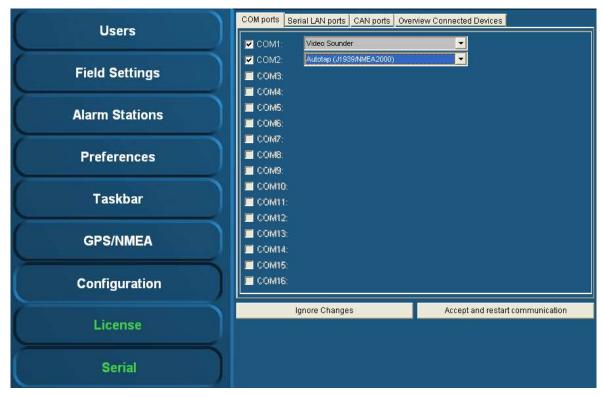


Figure 1-3: COM port assignment

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1.3 Serial LAN ports

Under "Serial LAN ports" (see Figure 1-4) the attached serial LAN device can be addressed and when necessary be calibrated.

The following fields are available;

- Serial LAN server
- Type (serial LAN server)
- IP address
- MAC address
- Data/control port
- LAN1 and LAN2

After installation a calibration procedure must follow, to ensure that the LAN device will function properly.



Figure 1-4: Serial LAN ports

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1.3.1 Serial LAN server

Under "Serial LAN ports > Serial LAN server" (see Figure 1-5) the server to be assigned can be selected. In addition under "Type" the LAN server type can be selected.



Figure 1-5: Type (Moxa)

1.3.2 Type (Moxa UC-711X)

The Moxa is found under "Type" > "Moxa UC-711X" (see Figure 1-5).

Fill in the IP address of the Moxa unit under "IP Address" (use same range as the PC i.e. 192.168.x.x, for Moxa the last digits are in the 40 range).

The very first connected Moxa unit is set to IP address 192.168.1.41 and the next available to 192.168.1.42 etc.

NOTE:

The MAC address can be found on the sticker underneath the unit.

For the Moxa unit it is necessary to use a MAC address under specified under "MAC address". If necessary, verify the LAN1 and/or LAN2 settings and choose the appropriate device interface / protocol (see chapter 1.2.1).

To confirm the settings, click "Accept and restart communication" and verify if the serial data is working within FT NavVision[®].

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1.3.3 Type (V-Linx ESR-904)

The V-Linx is found under "Type" > "V-Linx ESR-904" (see Figure 1-6).

Fill in the IP address of the V-Linx unit under "IP Address" (use same range as the PC i.e. 192.168.x.x, for V-Linx the last digits are in the 40 range).

The very first connected V-Linx unit is set to IP address 192.168.1.41 and the next available to 192.168.1.42 etc.

NOTE:

Please be aware that multiple units (same system) will operate within the same IP address range (192.168.1.4x). Use different IP addresses, otherwise the system may not function properly.

Verify the LAN1 - LAN4 settings (if available) and select the appropriate device interface / protocol (see 1.2.1).

To confirm the settings, click "Accept and restart communication" and verify if the serial data is working within FT NavVision[®].



Figure 1-6: Type (V-Linx ESR-904)

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1.3.4 Type (ICPdas i7540D)

The ICPdas is found under "Type" "ICPdas i7540D" (see Figure 1-7).

Fill in the IP address of the ICPdas server under "IP Address" (same range as the PC i.e. 192.168.x.x, for ICP the last digits are in the 50 range).

The very first connected ICP is set to IP address 192.168.1.51 and the next available to 192.168.1.52 etc.



Figure 1-7: Type (ICPdas i7540D)

Verify the LAN1 and LAN2 settings (if available) and select the appropriate protocol (see 1.2.1). To confirm the settings, click "Accept and restart communication" and verify if the serial data is working within FT NavVision®.

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1.4 CAN ports

Under "Serial > CAN ports" the following menus are available:

- Interface
- Standard
- IP
- Group.



Figure 1-8: CAN ports

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1.5 Overview connected devices

NOTE:

The installation of serial devices may require some calibration. For example, it may be possible that you need to make some adjustments in the "INI-files".

Under "Serial > Overview Connected Devices" (see Figure 1-9) an overview of the connected devices is shown.

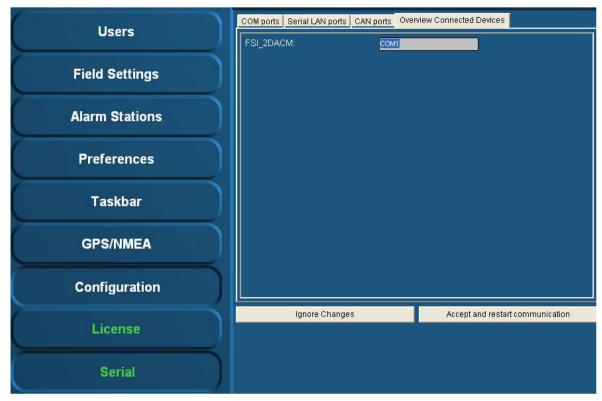


Figure 1-9: Overview connected devices

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1.6 IP-Address standardization

For standardization purposes the same IP-addresses are used throughout each system. In the table below you'll find the IP-addresses (standard protocol) for most instruments.

Detail	IP-Address	
PC I/O	192.168.x.x (192.168.24.35 for key number 2435)	
PC backbone 172. 16.x.x (172. 16.24.35 for key number 2435)		
Duty Alarm Panels Using range x.x.1.8y		
(DAP)	If they are attached to the backbone network, this will result in:	
	DAP 1: 172.16.1.81	
	DAP 2: 172.16.1.82	
	DAP 3: 172.16.1.83	
Serial LAN servers	Using range 192.168.1.4x (attached to I/O subnet)	
	INT 1: 192.168.1.41	
	INT 2: 192.168.1.42	
	INT 3: 192.168.1.43	
Wago	Using range 192.168.1.9x (attached to I/O subnet)	
	Wago substation 1: 192.168.1.91	
	Wago substation 2: 192.168.1.92	
	Wago substation 3: 192.168.1.93	
CAN-Interface	Using range 192.168.1.3x (attached to I/O subnet)	
	CAN interface 1: 192.168.1.31	
	CAN interface 2: 192.168.1.32	
	CAN interface 3: 192.168.1.33	
Axis	Using range 192.168.1.24x (attached to I/O subnet when less than X	
	camera's)	
	Axis cam server 1: 192.168.1.241	
	Axis cam server 2: 192.168.1.242	
	Axis cam server 3: 192.168.1.243	

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1.7 Network

Under "Configuration > Network" the present network connections are shown (on right-hand side of window).

Select the IP-addresses of the network ports to use with the network server / client module (click and hold the Ctrl-key to select multiple network ports).

To confirm the settings, click "Accept and restart communications".



Figure 1-10: Network

NOTE:

If there is no connection between server-clients or server-server, this is the most appropriate way to check. If the network ports aren't selected here, there is no connection possible. Make sure that all the network ports are selected and then acknowledge via button "Accept and restart communications".

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1.8 Performance

1.8.1 Modules

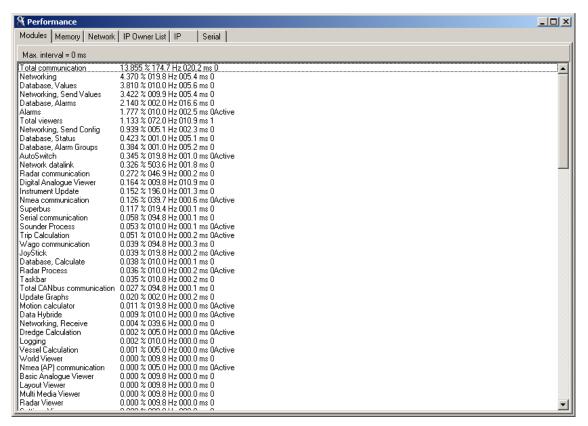


Figure 1-11: Modules

Via menu "F11 > Modules" the elapsed time period is shown for each FT NavVision® module in relation to the total time period.

The columns are arranged as follows:

Detail	Description
Module Name	Internal name used by FT NavVision® to describe the module
Percentage	Percentage of processing time, where total FT NavVision® is 100%
Refresh Rate	Processing number in seconds
Total time	Total (module) processing time (in milliseconds)
Semaphore	Should be "0" or "1"
Active	Appears when active during the screen refresh

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1.8.2 Memory

Under "F11 > Memory" developers can track for the presence of possible memory leaks. By default the option "Activate memory manager" is disabled to avoid significant performance degradation.

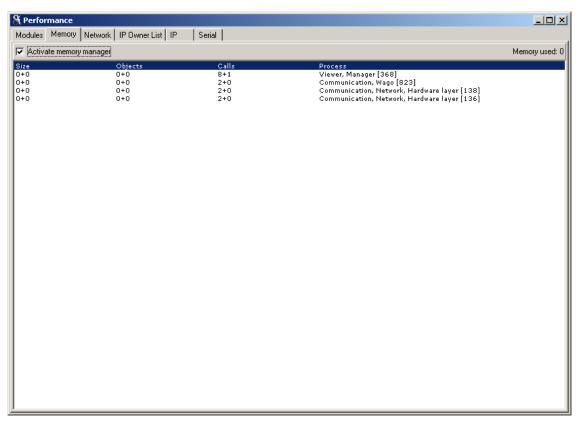


Figure 1-12: Memory

The columns are arranged as follows:

Detail	Description	
Size	The size (bytes) of an object	
Objects Relative number of objects created or deleted since activation of memory		
	manager	
Calls	Number of creation / deletion calls	
Process	Process creating / deleting the objects	

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1.8.3 Network

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1.8.4 IP Owner List

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1.8.5 IP

Under "F11 > IP" a list of all network connections as handled by the relevant FT NavVision® workstation is shown.

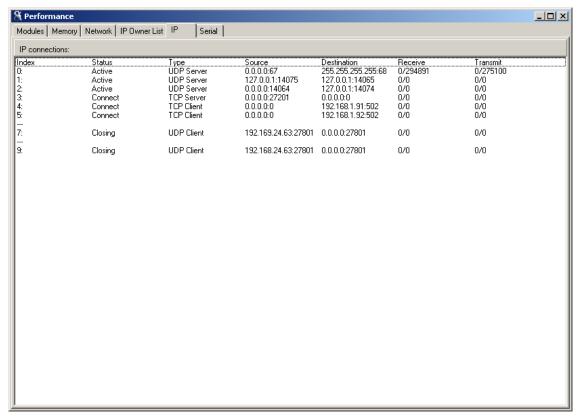


Figure 1-13: Performance > IP

The columns are arranged as follows:

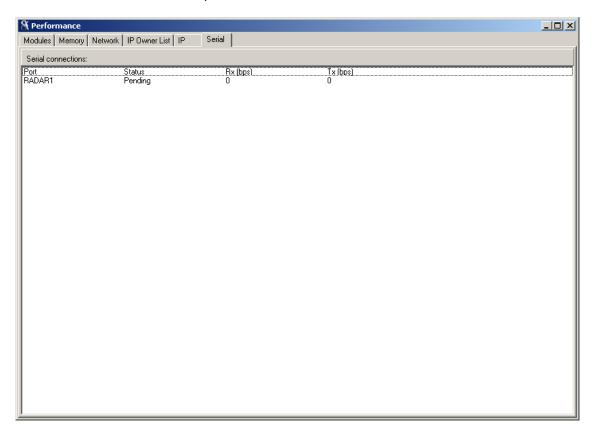
Detail	Description	
Index	Internal index used by FT NavVision®; not of importance in this list	
Status	Active > when connected	
	Connect > when trying to connect	
	Closing > when closing the connection	
Туре	Type UDP server, UDP client, TCP server or TCP client	
Source	The source of the connection. When "0.0.0.0:0" is shown, no source address	
	was specified when opening the connection, where "0.0.0.0:x" means that	
	port "x" on this computer is being used for server functionality	
Destination The destination of the connection		
Receive Number of Bytes left in the internal buffer / Number of bytes receiv		
Transmit Number of Bytes left in the internal buffer / Number of bytes sent		

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1.8.6 Serial

Under "F11 > Serial" the serial port status is indicated.



The columns are arranged as follows:

Detail	Description
Port	The serial port name.
	The possible radar port is also shown as a serial port, named "RADAR1".
	When it is not used, the status stays on "Pending".
Status Serial port status i.e. "Failed", "Pending", "Closed" and "Open"	
Rx (bps)	Number of bits "Received (Rx)" during the last second
Tx (bps)	Number of bits "Sent (Tx)" during the last second.

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1.9 Wago device

1.9.1 General

Under "Tools > Configuration > Wago" (see Figure 1-14) all detected and connected Wago devices become visible including the server to which they are connected to. In addition, the Wago Device Manager allows you to fill in the respective device(s),

- MAC address
- IP address.

In general, by means of the sensor list changes are made. But for minor changes or to improve the control of the device, please refer to this menu.

1.9.2 Wago Device Manager

Under "Configuration > Wago > Wago Device Manager" the following window appears:



Figure 1-14: Wago Device Manager

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When the devices are correctly installed and connected, the respective MAC addresses will be shown via the "Wago Device Manager" window.

If the MAC addresses do not show, it is possible that the Wago devices need to be restarted. This can be accomplished by

- Disconnecting electrical power from the Wago device for a short period of time
- By pushing down (to center position "STOP") the operating mode switch (see Figure 1-15).

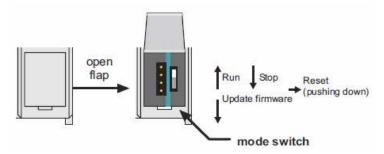


Figure 1-15: Operating mode switch (Wago)

The operating mode switch (see Figure 1-15) is a push/slide switch with 3 settings and a hold-to-run function.

Operating mode switch	Function
From center to top position	Activate program processing (RUN)
From top to center position	Stop program processing (STOP)
Lower, bootstrap	For original loading of firmware, not necessary for user
Push down (i.e. with screwdriver)	Hardware reset.
	All outputs and flags are reset; variables are reset to 0
	or to FALSE or to an initial value.
	Retain variables or flags are not changed.
	The hardware reset can be performed with STOP as
	well as RUN in any position of the operating mode
	switch!

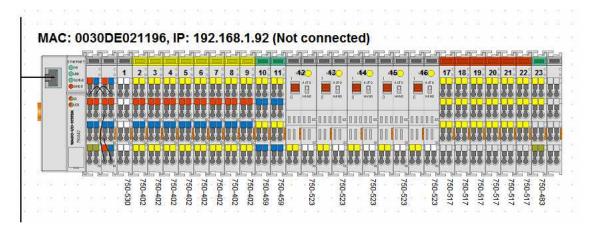
If the device manager shows a MAC address, check this against the MAC address on the head station on the Wago. If it is right, click the check box.

Fill in the IP address the Wago device (must be in the same range as the PC, i.e. 192.168.x.x). For Wago the last digits are in the 90 range. The very first connected Wago will be set to 192.168.1.91 and the next available to 192.168.1.92 etc.

Confirm the settings by clicking the "OK" button. The screen will show the connected Wago devices, their respective MAC addresses, their given IP addresses and the server they are connected to.

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With a left mouse click (on Wago device) a more detailed view appears (see Figure 1-16). This view shows the separate Wago system modules including the wiring connections. In addition it is possible to verify each device pin, perform device settings and calibrations.

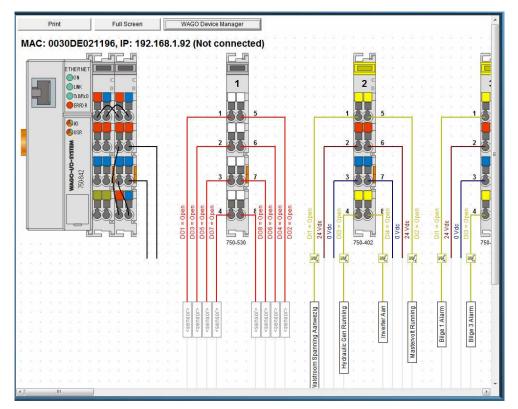


Figure 1-16: In-depth view (Wago)

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1.9.3 Wago adjustments

Via the Wago list minor adjustments can be made. Go to menu "Tools > Configuration > Wago" and click the respective Wago device.

Find the system module you wish to adjust / alter and click the box underneath the pin you want to change. A new window will open:

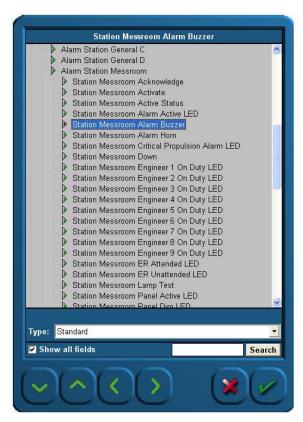


Figure 1-17: Field selection menu

You can choose the field (field selection) that you wish to act upon that pin of the Wago (see example "Station Messroom Alarm buzzer, Figure 1-17). Depending on the of system module function (DI, DO, AI, AO) you must be aware of the field that represents the I/O connected to that particular pin. Please refer to the troubleshooting guide for more detailed troubleshooting data.

Please make sure that "Input" is set for the right setting (NO/NC1).

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¹ NO = Normally Open NC = Normally Closed



1.9.4 Type

Under "Type" (sensor type) a variety of sensor types can be chosen. The most commonly used types are described.

Click the arrow button of the dropdown menu to open the sensor list (see Figure 1-18). The following sensor types are shown:

- Standard
- Inverse
- Set request
- Reset request
- Pending request
- Auto mode
- Low and high speed mode

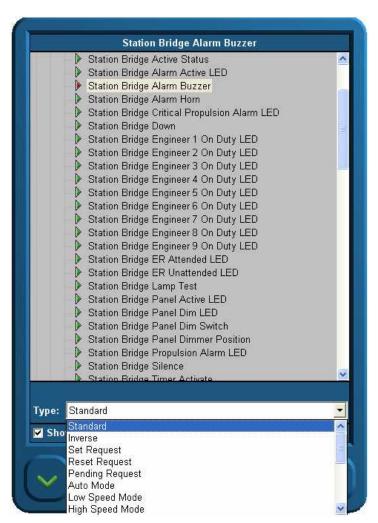


Figure 1-18: Sensor type list

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1.9.4.1 Standard

This is the standard setting. Via this setting nothing extra will be added to the field. Leave it on standard if nothing else is required or if you don't know.

1.9.4.2 Inverse

1.9.4.3 Set request

NOTE:

Does not function without Digital In (DI) status.

The "Set request" signal output generally is a digital output.

Once selected, a request will be set to the attached sensor (e.g. a valve or other device that can be steered to open), and it will stay set until it gets a status back that the request is fulfilled. Needs to be combined with a DI where the status of the sensor will be connected to (i.e. open/close).

1.9.4.4 Reset Request

NOTE:

Does not function without Digital In (DI) status.

The "Reset request" signal output in general is a Digital Output (DO).

Once selected, a request will be set to the attached sensor (e.g. a valve or other device that can be steered to open), and it will stay set until it gets a status back that the request is fulfilled. Needs to be combined with a DI where the status of the sensor will be connected to (i.e. open/close).

Impulse relay:

If an impulse relay is connected to a DO you don't want to generate a constant voltage. Put the status on "Impulse Relay" and the DO will give a short pulse when triggered.

Status:

Is general used on DI. If you need to know the status on an attached sensor but that sensor is in use by the PLC-program, you can use status in the Wago configuration. Now it reads the status of the sensor without interfering with the PLC-program.

On/Closed Status:

Does the same as the set/reset request but then on the DI. Look at a specific sensor to find out that it is functioning. When on is detected it knows the position is closed.

Off/Opened Status:

Does the same as the set/reset request but then on the DI. Look at a specific sensor to find out it is off. When off is detected it knows the position is opened.

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Switch:

When a switch is connected to a DI (i.e. an external pushbutton) you must set the status to switch. A box will appear which reads "request". Now Wago will know that it has a switch connected and will act accordingly. If this status isn't set upon a hardwired button, this button will not work.

Low Alarm:

If the connected field isn't a specific alarm field (see "Field Settings > Alarm") it is possible you still like it to act upon an alarm. For example if you have the field "Fresh water level" you could like to have an alarm when the tank is almost empty. Here is where you can put the status to "low alarm". The system will identify it as an alarm field and will consequently show the alarm on the alarm panel and logbook. Note that it states "ext." on the alarm panel to indicate that it is an external alarm.

Too low Alarm:

See low alarm.

High Alarm:

See low alarm.

Too High Alarm:

See low alarm.

Failure Status:

It is the same as status, but in this case mostly used as a setting to check whether the sensor is in failure. It is used to set failure status on Bulb failure or as general alarm from attached devices.

1.9.5 Wago Calibration

In Wago you can calibrate the sensors, which is especially proficient when it is non linear. As example we'll show a calibration of a tank.

The best steps to calibrate the tank sensors are as following:

- Shut down all the NavVision installations except for one server. This must be done to make sure this server's calibration will not accidentally be overwritten by any other system on the network
- 2) On the running Server system, open the Wago configuration and follow the next steps for every field
- 3) Press the "W" on the (green 750-459) modules containing the tank level sensors. The 750-459 modules measures 0 to 10 volts DC
- 4) You now see the old calibration. Be aware of the measuring unit used. The graph (see Figure 1-19) shows the unity on the Y-axis; depending on the actual field settings
- 5) Write down the measured voltage for an empty tank.

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The measured voltage is shown below the graph.

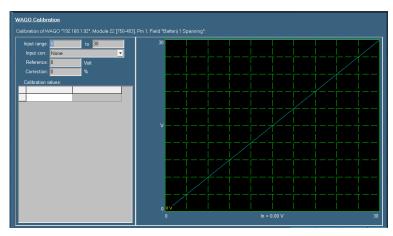


Figure 1-19 Graph (WAGO calibration)

You can enter this value in the first row/first column of the table. In the right column, enter "0". This column is the amount of unity's noted down in step four.

You now have configured that this amount of voltages gives "0" (gallons/liters/...)

- 6) Fill the tank until you see the voltage changing. Depending on the sensor, it can be that the first amount is not measured
- 7) Write down this voltage and amount of liters/gallons (depending on the unity) on the next row
- 8) Repeat the filling/noting down the values steps as much times as you like. If the tank is completely linear, four times could be a good choice. If not, it's better to make more measurements concerning the odd-shaped part of the tank
- 9) Finally, be sure to take a measurement with a full tank. You now see the blue line containing your calibration
- 10) Repeat step 3 t/m 9 for every tank sensor available on the ship
- 11) Shut down FT NavVision®
- 12) Copy the file "cal.ini" from the "config" folder of the configured NavVision to an USB stick. This file contains all the calibrations made
- 13) Copy this file ("cal.ini") FROM the USB stick TO every server system on the ship. This will overwrite the old calibration of the servers.

From now on each system is calibrated.

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1.10 Taskbar

1.10.1 General

To open the FT NavVision® taskbar menu, select "Tools > Taskbar". The taskbar menu is used to configure the taskbar.



Figure 1-20: Taskbar menu

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The following taskbar settings are available:

Setting	Description
Hide the taskbar when there	This option allows you to hide the taskbar, in case all viewers are
is no viewer activated	inactive. This function can be disabled, by moving the mouse cursor
	to the top of the screen.
Show the taskbar when	This option allows the taskbar to appear whenever an alarm occurs.
there is an alarm	This overrides the previous setting of the hidden taskbar.
Visible	This option allows you to select the availability of viewers. You can
	select the viewer that must be displayed and be accessible through
	the taskbar or not.
Autostart	The second option enables you to determine the viewers that
	automatically open at startup of the software.
Display	The display box defines the screen used for each viewer. The number
	shown symbolizes the displays as shown at the bottom of the screen.
Layout of the displays on	This setting allows you to show the placement of the different screens
the desktop	connected to your system. The display order, size and the number
	available for display of viewers are shown.

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1.11 Preferences

1.11.1 General

With the field "Preferences" (see Figure 1-21), you can set several personal preferences. For example, you can set the software language, set the ships heading references as well as configure the SMS service.

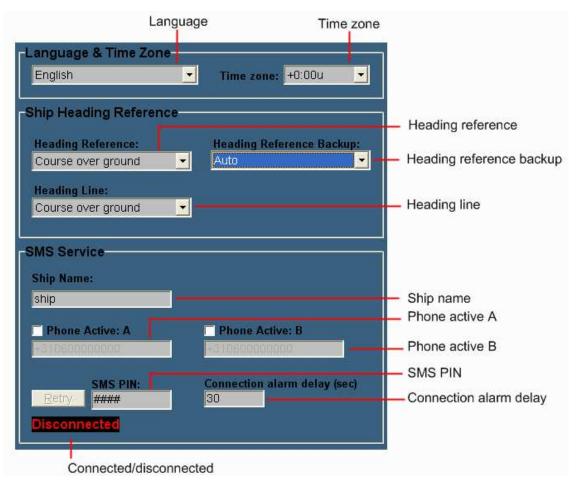


Figure 1-21: Preferences

1.11.2 Language and time zone

By clicking the "Language" arrow, all available software languages appear. Simply click on one of these languages to set the default language for all software modules. By clicking the "Time zone" arrow allows you to set the relevant UTC² time zone.

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² UTC = Universal Time Coordinated



1.11.3 Ship heading reference

This option allows you to choose the default references for heading, heading backup and heading line. The options range from Auto to Course over ground, Gyro compass, true compass and magnetic compass.

1.11.4 SMS service (ship name)

Ship name is used to enter your ship's name into the software. Of course, the name is entirely your own choice and has no influence on the software's functions.

1.11.5 SMS service (phone active A & B)

NOTE:

When entering a phone number always include your country code.

Phone activate A/B are used to store the telephone numbers of one or two mobile phones you want to receive text-messages with. First, tick off the checkbox for each phone in use and enter the phone-number of your choice.

1.11.6 SMS service (SMS PIN)3

Via the field SMS PIN, enter a personal code (any combination), used to establish a connection in between your phone and the system. The black box below shows whether a connection is established or not.

Detail	Description
Connected	Indicates that a connection is made. Alarm messages are allowed to be sent
	to your mobile phone.
Disconnected	Indicates that no connection is made. No alarm messages to be allowed.

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³ Functionality only applicable with SMS hardware module + license



1.12 Field settings

Under "Tools > Configuration > Field Settings" you'll find the tools to adjust and fine-tune on field label basis. For every I/O you attach a label onto you will find different ways of tuning in each tab of field settings.



Figure 1-22: Field settings

The following settings are available:

Alarm

Settings of user alarms, warning alarms, critical alarms, Alarm group settings, SMS settings, inhibit settings

Min/Max

Setting of instrument range, zone marking, default unit and filter

Tune

Setting of tuning table, see results and sender

Comment

Check and change group label, group label logbook, field label and field label instrument

Log

Setting and enabling/disabling logging for each field label.

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1.12.1 Alarm

Choose the field you would like to change the alarm settings for (for example Engines > Engine1 > Alternator alarm).

Depending on the field selection, a number of field settings are available. In this example of the "Engine 1 alternator alarm" the following settings are allowed:



Figure 1-23: Alarm settings

An alarm field such as the alternator alarm is already set as alarm. Meaning that if the field is triggered it will give an alarm in FT NavVision[®]. The settings that can be altered are the following:

Delay(s)

The time (in seconds) the system will wait before it will show the specific alarm that is triggered. This is necessary if a hysteresis is needed (i.e. a bilge alarm that is on the edge of the alarm by the rocking of the ship, will not go of all the time if you put in a delay)

Alarm Group

Here you can put the alarm in a specific group. By putting it in a group you can manage the rights of different users on whether they can silence or acknowledge these alarms. For more detailed information please refer to chapter "Alarm stations"

PC Sound

Click the drop down menu to choose a sound that will be played if an alarm is active

Send SMS to mobile when alarm active

Check "Send SMS to mobile when alarm active" to activate the SMS alarm module for this field. If this field goes in alarm a SMS will be send to the telephone number specified under "Preferences".

A license for SMS is required for this field to work. If the system is not equipped with the SMS alarm license, the field as mentioned before is still available but will not work.

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Inhibit when

Specific operating conditions require an alarm inhibit (suppression).

For example:

If you have an engine oil pressure alarm (normally set to low), comes on when the engine oil pressure is low.

In addition, it also comes on when the engine is not running (oil pressure is low).

This is not desirable. To prevent an alarm when the engine is not running, you can inhibit the alarm. When the field "Engine running" is available you can tick the "Inhibit when" box, select "Engine > Engine 1 Running" and set the field boxes to "<" and "0,5" (see Figure 1-24).



Figure 1-24: Inhibit function (one field)

You can even choose another field and inhibit this one as well by selecting "and/or" to inhibit the field when either one or both settings are true.



Figure 1-25: Inhibit function (two fields)

NOTE:

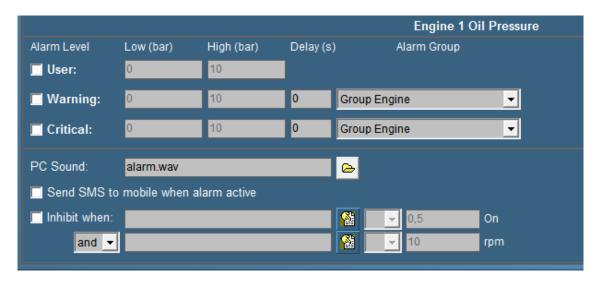
If you specify just one inhibit field, make sure the "and/or" box is set to "and". Otherwise the alarm field will not work.

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Other settings

Different fields require different settings. If you choose an analogue field (i.e. oil level), you get the following additional settings:



Alarm levels

o User

Via this check box the user alarm settings are set. In this example you can set the alarm threshold (low and high). Usually you will not set them here but in the instrument itself (it is a user alarm) but you can check and/or change them here

o Warning

The warning alarm is a dedicated alarm to warn the user when certain thresholds are exceeded. This alarm can have a dedicated delay and a dedicated alarm group.

Choose these thresholds widely within the boundaries of the capabilities of the attached device (check specific manual for the values)

o Critical

To set the critical alarm thresholds (check specific manual for these values).

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1.12.2 Min/Max

Under "Tools > Field Settings > Min/Max" (see Figure 1-22) the instrument boundaries can be set. For example the "Engine 1 Oil Pressure" instrument can be set as follows:

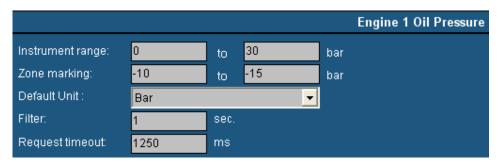


Figure 1-26: Min/Max settings

• Instrument range

The instrument range field is used to define the measuring range (scale) of the instrument.

For example: the indicator below is scaled from 0 to 30 bar.



Figure 1-27: Engine 1 oil pressure indicator (0 - 30 bar)

NOTE:

In order to detect and identify a deviating function, make sure that all instrument (in a column or row) pointers are aligned to the same position (default mode).

Check the default values of each instrument and set the instrument range accordingly.

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Figure 1-28: Instrument pointers

By aligning the instrument pointers to the same position (see Figure 1-28) it will be easier to detect a deviating function.

Zone marking

If the sensor values and their working ranges are known is working, you can set a zone marking. It puts a grid over the desired values on the instrument, to verify if the readings are correct.



Figure 1-29: Zone marking

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Default unit

At startup each instrument will show the unity in which it will display the data. Depending on the sensor type select the desired unity (see Figure 1-30).



Figure 1-30: Default unity

Filter

If an instrument reading seems to be a little erratic, you can select a higher number (see Figure 1-30) to dampen the movement of the instrument pointer.

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1.12.3 Tune

Tune table

The "Tune table" settings allows the user you to fine-tune the output of the sender.

Example 1: Sensor value too low.

In such a case you must change the second input value. You can change the input value as follows: Input value = $0.8 \rightarrow \text{Real value} = 1$.

The statement above implies that for every input of 0.8 bar the output (actual reading) is 1 bar. In other words, any sensor input value of 4 bar corresponds with an instrument reading of 5 bar.

Example 2: Sensor value too high.

Change the input value as follows:

Input value = $1.2 \rightarrow \text{Real value} = 1$.

The statement above implies that for every input of 1.2 bar the output (actual reading) is 1 bar. In other words, any sensor input value of 5 bar corresponds with an instrument reading of around 4 bar.

For threshold values you can change the first input value. If the pressure indication has to start later than given, you can put in "Input value = $0.2 \rightarrow \text{Real value} = 0$ "

This will make the instrument starts displaying as soon as the threshold of 0.2 bar has been reached. This can be accomplished the other way around.



Figure 1-31: Tune table

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Result

The "Result" box displays the exact incoming measuring data. The second box displays this data via the respective instrument that is connected to the sensor. If for example the sensor gives a pressure (bar) output for every 20 mV, the real time result may read " $100 \rightarrow 5$ bar" (see Figure 1-31). As a result the sensor reads "100 mV" and indicated as "5 bar" on the instrument.

NOTE:

Values may differ per sensor type.

Sender

In the "Sender" box (see Figure 1-32) displays the device name where the data is coming from. If the sender field shows "Not available" indicates that that the sensor isn't giving any data (for a reason why it is not giving data, check the troubleshooting section).

Other items you can see in the box "sender" are: NMEA, Wago, Serial, Modbus, Calculated in, etc. this gives you an indication where the signal is coming from.

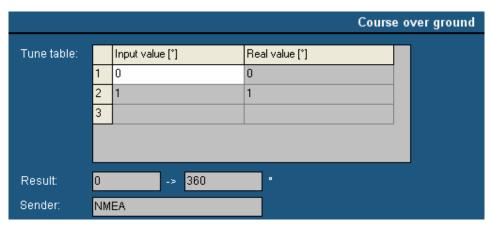


Figure 1-32: Sender box

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1.12.4 Comment

In the "Comment" section you can change the names of different fields to get an overall clarity. These names can be changed for the clarity in an instrument or a logbook if the sensor has an explicit name. Sometimes you have to use an auxiliary field when the name for that sensor is not available.

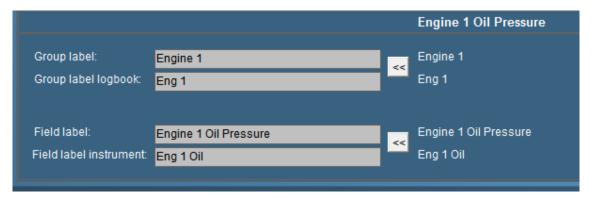


Figure 1-33: Comment

Group label

Via "Group label" you can assigns a field to a specific "Alarm" group. The name is written in full so there will be no misunderstanding. It is especially handy if you have different sensors, which are arranged in different groups. Once grouped, you change them in "Group label". For more detailed information concerning alarm groups please refer to chapter "Alarm stations".

• Group label logbook

is the label that is shown in the logbook (see chapter logbook). To save space you type an abbreviation of the group label. This is helpful to check in the logbook. All the alarms in the Logbook will have a group available so it is distinct where to place the alarm.

Field label

The field label is the exact indication of the sensor. For every sensor in FT NavVision you need a unique ID. That ID is the field label. Whether it is already preprogrammed or you rename an auxiliary field, that field label represents from then on the sensor. Knowing this, NavVision can connect this sensor to an instrument, calculate with it etc. mostly you will see the representation of this field label in the Wago (see Wago), but it is possible you find it in other, programming or calibration files.

Field label instrument

The name of the sensor showed in the instrument is set in the field label instrument. While there isn't always that much space in an instrument, we use an abbreviation of the "Field label". If you have to make up a name yourself be sure to choose a name that is representing the sensor and is clear, even in the abbreviation.

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1.12.5 Log

For troubleshooting and examination purposes you can log all the fields. All the data coming in on each specific field can be saved to a log file.

Go to "Tools > Field Settings > Log" and choose the right field (e.g. Engine 1 Oil Pressure).



Logging

Choose whether to enable or disable the logging on this field.

Interval

Depending on the data on the field you can choose an interval her form 1 second to 2 hours. Useless to say that the log file is getting a lot bigger at an interval of 1 second. Be very precautious when using this.

• Filename

Here you can chose the name and place where you save the log file.

NOTE:

Save the log file to D: or any other disk that FT NavVision® is running on. If you save the log file on to c: (the embedded disk) you loose the log every time the system starts up again.

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1.13 Users

The tab "Users" features all the adjustments to set up different access control for different users. The main reason for user access control is protecting the system. By limiting the user changing the configuration settings etc. the chance of disturbing system operation is limited as well. Basically only three users are available. Administrator is the user status for Free Technics and its representatives. This login has all the rights available. This is logical because at commissioning and installation you need to be able to alter all the settings.

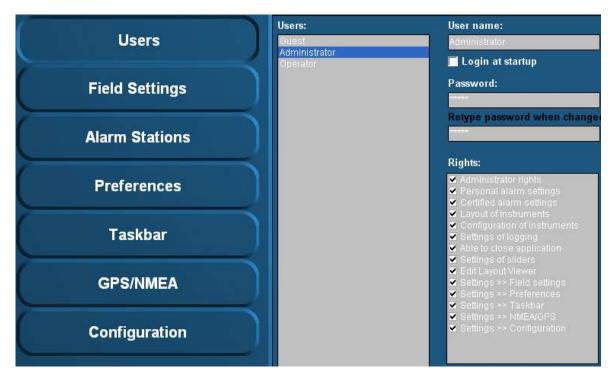


Figure 1-34: Users

1.13.1 User name

This is a box that shows the active user and his rights.

1.13.2 Login at startup

Tick this box to set the default user at startup (default operator).

1.13.3 Password

NOTE:

The user name "Administrator" is always password protected (default "admin").

If a password is required please type password here. When changing the password or typing the password for the first time, retype password at next field "retype password when changed".

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1.13.4 Rights

Rights can be set (by check mark) for each user. Rights are divided in several subgroups. Each user can have one or more rights. By putting a check mark you can set the rights.



Figure 1-35: Rights

Rights	Explanation
Administrator rights	The right to change settings and user settings
Personal alarm setting	Set personal alarms directly in the instruments
Certified alarm setting	Set certified alarms in Field settings > Alarms
Layout of instruments	Change layout of instruments (i.e. unit, analogue-digital etc.)
Configuration of instruments	Change fields that instruments are representing
Settings of logging	Make logs of incoming data (see "Configuration > Field
	settings > log")
Able to close application	Decides if the button to close FT is available
Settings of sliders	Allow setting of sliders in layout viewer
Edit layout viewer	Makes it possible to change the layout viewer
Settings > Field settings	Allows changing the field settings (see "Tools > Field
	Settings")
Settings > Preferences	Allows changing the preferences (see "Tools > Preferences")
Settings > Taskbar	Allows changing the taskbar (see "Tools > Taskbar")
Settings > NMEA/GPS	Allows using "Tools > NMEA/GPS" tab
Settings > Configuration	Allows changing of configuration settings

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Administrator rights

All rights.

Operator rights

Via "Setting > Preferences", you are allowed to change time and language, ships heading reference and SMS service.

This can be extended with additional rights depending on what is needed.

NOTE:

Under "Operator rights" you will NEVER get the rights as mentioned below.

- · Administrator rights
- Certified alarm setting
- Configuration of instruments
- Settings of logging
- Settings of sliders
- Edit layout viewer
- Settings > Field settings
- Settings > Configuration

1.13.5 Add / Remove

Via the "Add / Remove" buttons a user can be added or removed.

For example you need to add a user for the shipyard or the installation company. Click "Add" and fill in a new user name. For the removal of a user, click the user then click "Remove" and acknowledge.



Figure 1-36: Add / Remove

NOTE:

Setup the new user direct at the beginning of the setup. In this way the user will get access to all settings and adjustments. If you set a new user after you've finished installing and adjusting the system, this will result in an empty user. All adjustments you've made are not visible. You can get the adjustments you made to appear in the new user by copying the content of the "administrator.ini" to the new user ini-file (i.e. shipyard.ini). For more information please refer to section "Adjusting ini-files".

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1.14 Alarm stations

The installation on board can be divided into different parts (alarm stations) which all can have different rights concerning the completion of alarms. Besides that it is proficient to have different rights for different groups onboard it is also prescribed by organizations such as Lloyds Register etc. there are preset names to choose from.

These groups can be setup with specific alarm-rights.

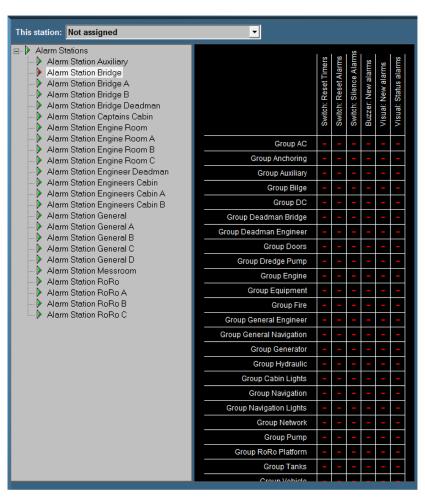


Figure 1-37: Alarm stations

1.14.1 This station

Defines the station this computer is set on. All the alarm settings of that station are also valid for the PC screen you are working on. If set to "Not Assigned" no specific alarm restriction is set. All alarms will be visible and can be silenced or acknowledged.

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1.14.2 Adjustments

On the left pane you can choose the alarm station to be adjusted. The adjustments will only be valid for that particular station. When you choose to set this station (i.e. Alarm station bridge) on an alarm panel or another Server or client, these will have the same settings automatically.

NOTF.

All the settings in the diverse alarm stations will automatically be set in all the other pc's (servers and clients) which are connected. You won't have to change all PCs separately. On the left panel you will find all the groups that are available in the system.

Groups that are in use by the system are shown right here. Other groups will not be available. You can set the alarm options for each separate group.

When finished, all alarm options of each alarm group will be set within the specific alarm stations.

The following options are available:

Alarm group option	Explanation
Visual: status alarms	Shows any alarm even if it is acknowledged
Visual: new alarms	Shows new alarms for this group
Buzzer: new alarms	Sounds buzzer on new alarms for this group
Switch: silence	Allows to silence the alarms for this group
alarms	
Switch: reset alarms	Allows to acknowledge the alarms for this group
Switch: reset timers	Allows resetting of timers (i.e. dead man's timer)

1.14.2.1 How to set

Fields are set separately by pointing the mouse onto that field and right click it. The "Reset" fields will turn to "+" and the other fields will turn to "0" which simultaneously means that the delay is set to "0" minutes.

	Switch:	Switch:	Switch:	Buzzer	Visual: P	Visual: 9
Group AC	-	+	0	-	-	-
Group Anchoring	-	-	-	0	-	-
Group Auxiliary	-	-	-	Ξ	-	
Group Bilge	-	-	0	-	-	-
Group DC	-	-	-	-	-	-
Group Deadman Bridge	-	-	-	3	-	-
oup Deadman Engineer	-	-	-		-	-
Group Doors	-	-	-	-	-	-
Group Dredge Pump	1-	-	-	-	-	-

If you want to set a field to a higher delay (i.e. you want to silence an alarm for 3 minutes) you must left click the field. A menu will appear where you can change the settings including the delay time.

Check "Enable the selected cells" and choose a delay time.

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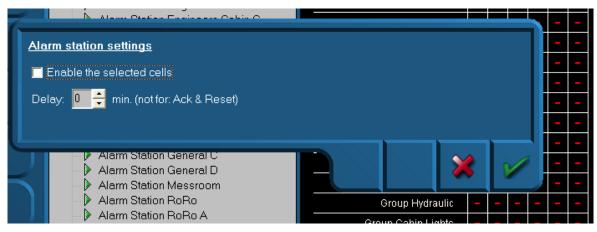


Figure 1-38: Alarm station settings

In addition, you can do this for different cells at the same time, by clicking and dragging the mouse over the preferred cells.

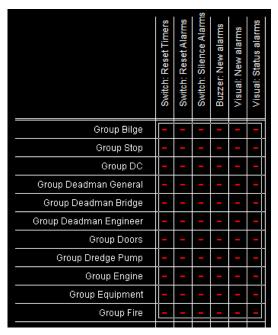


Figure 1-39: Select by dragging

If you want to disable the alarm settings, deselect the checkbox "Enable the selected cells".

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2. Logbook



Figure 2-1: Logbook button

2.1 General

During normal operation all system events will be registered chronologically. By clicking the "Logbook" button (see Figure 2-1) these registered system events can be displayed. In order to easily distinguish the displayed information, logbook reports are divided into colours. These colours are explained as follows:

2.2 Logbook colours

- White
 - Reports to indicate the system is busy processing data
- Green
 - Reports to confirm a certain system task is successfully completed
- Red
 - Reports to indicate a system error has occurred or an alarm is set off
- Orange
 - Reports to indicate a red report has been confirmed or that a white or green report has been interrupted
- Blue
 - Reports to indicate that parts of the system have been initialized.

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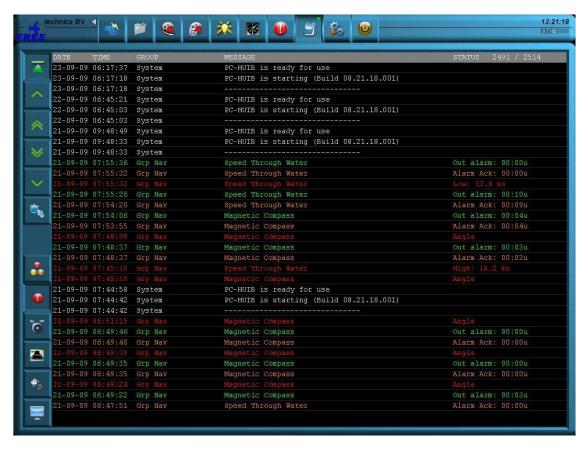


Figure 2-2: Logbook colours

2.3 Logbook functionalities

The logbook has the following functionalities:

- Navigation/scroll buttons
- Time period
- · Alarms from all stations
- Alarms
- Switching
- Network
- Serial communication
- System.

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2.4 Buttons

2.4.1 Scroll buttons

The scroll buttons are used to navigate through the logbook. The scroll buttons are explained as follows:











Figure 2-3: Scroll buttons

Button	Description
Scroll up/down (single)	To scroll up or down (one line at the time) the report list
Scroll up/down (double)	To scroll up or down (per page) the report list
Auto scroll	 ON The system event list is automatically scrolled with every new incoming event. OFF The system event list freezes.

2.4.2 Time period button

The "Time period" button allows you to define the view period (time frame) of all entries to be displayed.



Figure 2-4: Time period button

2.4.3 Alarms from all stations button

By selecting the "Alarm from all stations" button all alarm messages are shown, that are monitored by FT NavVision® including the alarm messages not related to this alarm station.



Figure 2-5: Alarms from all stations button

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2.4.4 Alarm button

By selecting the "Alarm" button all assigned alarm station messages are shown.



Figure 2-6: Alarm button

2.4.5 Switching button

By means of the "Switching" button all fields that are being switched by FT NavVision[®] are displayed (i.e. hard/soft wired I/O or the switching of viewers).



Figure 2-7: Switching button

A typical logbook entry is shown below (column "Message"):

- Field name e.g. "Viewer: Adjust Palette (Master)"
- Process name e.g. "Master" that switches the field
- "ON" or "OFF" status of the field being switched to.

2.4.6 Network button

Each Ethernet network connection will be logged under network entries. The following is shown:



Figure 2-8: Network button

• White

When a system tries to connect to a device

Green

When the system successfully establishes a connection with a device

Red

System fails to connect to a device or Connection with a device has been interrupted or General network error has occurred.

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2.4.7 Serial communication button

By selecting the button "Serial communication" the history of all serial communication systems is shown.



Figure 2-9: Serial communication button

White

The system tries to create a (local) serial connection or initializes a serial protocol instance

Green

The system successfully created a serial connection

Red

A serial connection error has occurred.

2.4.8 System button

Via the "System" button system information messages in general are shown.



Figure 2-10: System button

• Green

Successful process start

Red

A serious problem has occurred in the process.

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3. Duty alarm system

3.1 Introduction

The duty alarm system provides machinery alarms to bridge, cabins and public areas for an unattended (unmanned) machinery space. The duty alarm system will be configured from a particular Operator Work Station (OWS).

Duty Alarm Panels (DAPs) at each location are connected with the automation system via the system network (network switch and local processing unit). 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 essential alarm is present in the unmanned engine room. A watch safety timer on the workstation monitors the engineer working in the engine room.

When the engineer does not acknowledge within 30 minutes, the relevant engineers alarm is invoked, warning all engineers and bridge.

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

The "On duty" selection, "Call", "Unattended" and "Attended" functions are implemented on a dedicated mimic.

In general an alarm comes with visible and audible notifications.

The duty alarm system distinguishes two different alarm modes i.e.:

- Attended alarm mode (see
- Unattended alarm mode (see

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3.2 Design principle

3.2.1 Alarm groups

All alarms monitored values are divided into alarm groups. Alarms belong to a specific alarm group (see Figure 3-1). Active alarms are indicated by a flashing light (unacknowledged alarm) or steady light (acknowledged alarm).

The alarm messages are displayed on top of the screen and can be scrolled by means of the scroll buttons (see Figure 3-2).



Figure 3-1: Alarm groups



Figure 3-2: Alarm scroll buttons

3.2.2 Alarm types

3.2.2.1 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.

3.2.2.2 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.

3.2.2.3 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

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

3.2.3 Alarm inhibits

Some alarms are conditional and will be inhibited when a specific condition is present. This function is accomplished by defining a signal as an inhibit source for a specific alarm or a specific group of alarms.

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3.3 Duty alarm system

3.3.1 Overview

Duty Alarm Panels (DAPs) are installed in the accommodations and cabins. These panels display the alarms at these locations and invoke the on duty engineer in case an alarm arises during unmanned operation of the Engine Control Room (ECR).

The panels are installed typically at the following locations:

- Cabins
- Mess rooms
- Bridge.

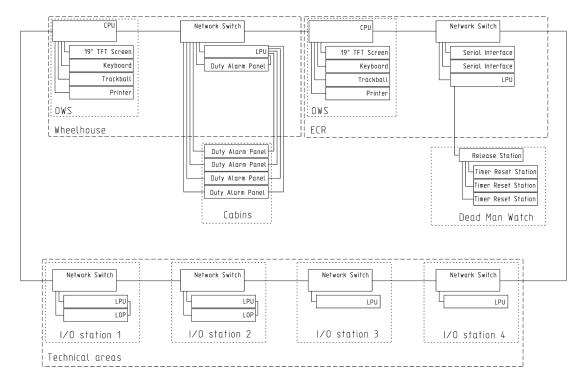


Figure 3-3: Overview duty alarm system

3.3.2 System description

The duty alarm system provides for signaling of Engine Control Rooms (OCRs) alarms to the cabins and bridge by an Operator Work Station (OWS) or on a Duty Alarm Panel (DAP). An engineer on duty can be selected from the Operator Work Station (OWS). He will be warned when an essential alarm is present in the unmanned ECR.

The duty alarm function on the OWS monitors the engineer working in the ECR. When the engineer does not acknowledge within 30 minutes, the General Engineers Alarm (GEA) is invoked, warning all engineers and bridge.

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The GEA can also be engaged on demand from the OWS. Any engineer can be called on demand from the ECR on the OWS.

3.3.3 Duty alarm panel

The duty alarm system exists out of DAPs connected to the OWS via a field bus cable.



Figure 3-4: Duty alarm panel

3.3.4 Controls and indications

The on-duty selection, call, attended and unattended functions are implemented on a dedicated mimic. The on-duty mimic can be called up by selecting one of the two buttons at the bottom of the screen

- Call button
- On-duty indication
- Duty select button.

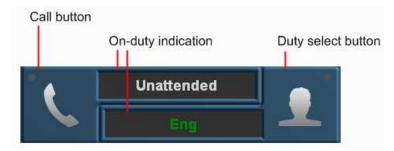


Figure 3-5: Call button / on-duty indication / duty select button

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3.3.4.1 Call button

From the duty alarm panel it is possible to call for a specific area (e.g. bridge or engine room), engineer or all engineers.

Press the "Call button" (see Figure 3-5), the call indicator will lit, and the selected area or engineer is called.

To cancel the call, push the "Call button" again.

3.3.4.2 On-duty indication

Press the "ATTENDED" button to signal that the engine control room is manned.

Press the "UNATTENDED" button to signal that the engine room is unmanned.

Via the "Duty select button" (see Figure 3-5) the responsible engineer (on-duty engineer) can be selected and will be displayed on the display ("On-duty indication").

3.3.4.3 Duty select button

Push the "Duty select button" (see Figure 3-5) and select the responsible engineer. The "Onduty indication" displays the responsible engineer.

3.3.4.4 Panel active button

The switch-on or switch-off the duty alarm panel.



Figure 3-6: Panel active button

3.3.4.5 On-duty selection

The on-duty mimic contains duty selection and call buttons. In addition, the selection attended/unattended can be made.

The "Bridge watch safety timer", "Engine room watch safety timer" (see Figure 3-7) including the "Engine room watch active button" and "Bridge watch active button" are also implemented on the server (dead man's watch).

At the bottom of the screen, the state of the watch safety timer is displayed:

When the engine room is UNATTENDED, the engine room watch safety timer is "OFF"
When the engine room is ATTENDED, the engine room watch safety timer is "ON"
(remaining time is counting down).

3.3.4.6 Watch safety timer

The watch safety timer (DM Timer⁴) remaining time is displayed at the bottom of each screen on the workstation. The timer counts down from 30 minutes back to 0 minutes.

When the timer reset has not taken place and the 3 minutes pre-alarm limit is reached, an alarm occurs on the workstation that no "Reset" button has been selected within the last 27 minutes. The watch safety timer "Remaining time" indication (see Figure 3-8) displays now in a red.

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⁴ DM Timer = Dead Man's Timer (eng = engine or bridge)



When selecting the "General Engineers Alarm" (GEA) button, or after countdown to 0 minutes (3 minutes warning cycle has passed) this means that the "Reset" button has not been selected within the last 30 minutes and the GEA is invoked.

The watch safety timer enters the "watch on; count down" stage when the "TIMER" key-switch of the "Release station" is at the "ON" position (clockwise position) and the "ATTENDED" button on the "Release station" is pressed. The unit returns to "watch off" by pressing the "UNATTENDED" button on the "Release station".

Turn the "TIMER" key-switch to "OFF" (counterclockwise position) on the "Release station" to disable this station. The key cannot be removed from this position.



Figure 3-7: Watch safety timer



Figure 3-8: Watch safety timer (remaining time indication)

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3.4 Dead man's watch alarm

3.4.1 General

A dead man's watch alarm provides a watch safety timer for personal protection, used when a single person works in an unattended area. The dead man's watch alarm consists of:

- A release station
- An acknowledge station.

3.4.2 Release station

The release station is used to indicate whether a machinery space is "Attended" or "Unattended". The release station consists of the following:

- Timer key-switch
- Unattended button (red)
- Attended button (green).



Figure 3-9: release station

3.4.3 Control buttons (release station)

Button	Detail	
Attended	Press the "Attended" button to signal Engine Control Room (ECR) is manned. The	
	button will be illuminated (green)	
Unattended	Press the "Unattended" button to signal ECR is unmanned. The button will be	
	illuminated (red).	
Timer	 Turn the "Timer" key-switch to off (counterclockwise position) to disable 	
	this station. The key cannot be removed from this position.	
	 Turn the "Timer" key-switch to on (clockwise position), and remove the key 	
	to engage the watch safety timer and attended / unattended functions.	

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3.4.4 Timer reset station

In order to acknowledge alarms to persons an on-duty a timer reset station is used. The timer reset station consists of the following control buttons:

- Test button (red)
- Dim button (blue)
- Reset button (green).

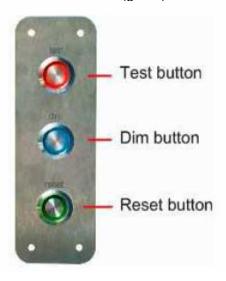


Figure 3-10: Timer reset station

3.4.5 Control buttons (timer reset station)

Button	Detail
Test	Push and hold the "Test" button on the timer reset station. All (button) LEDs are
	checked including the alarm buzzer.
Dim	To dim the panel LEDs
Reset	To acknowledge whether a person in a manned machinery space is still alive, one must activate (press) the "Reset button" to reset the safety timer (within 30 min.).

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