TECHNICAL SPECIFICATIONS - HMI WITH E-PREDICT V3

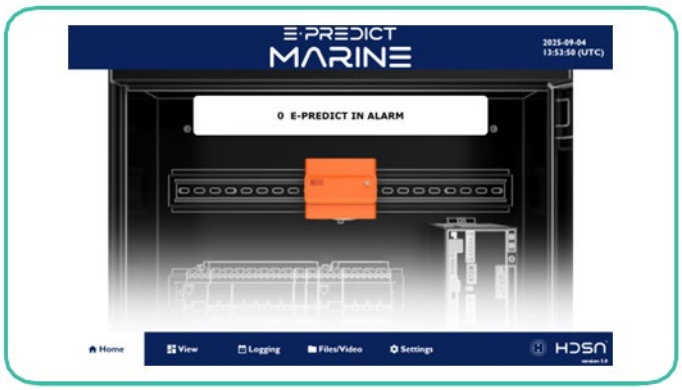
04/09/2025

HDSN provides a **dedicated HMI solution** for real-time monitoring of up to **512 E-PREDICT V3 with dry contacts**, using **digital input modules** that communicate via the **Modbus TCP/IP protocol**.

Key Features:

- **View the status of each connected E-PREDICT in real time.**
  → Monitor digital inputs states.

- **Trigger external alert system**
  → Automatically activate external alarms (e.g., sounders or flash indicators) in the event of:
  - ✓ Internal malfunction of an E-PREDICT
  - ✓ Abnormal overheating detection inside an electrical cabinet
  - ✓ Power cut at E-PREDICT



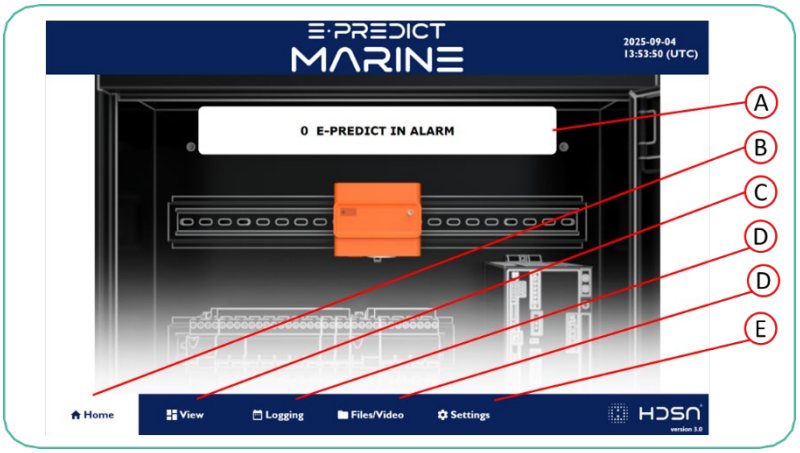
1. USE OF THE HMI

START SCREEN

HDSN can pre-configure the screen with the information from the implantation study carried out beforehand.

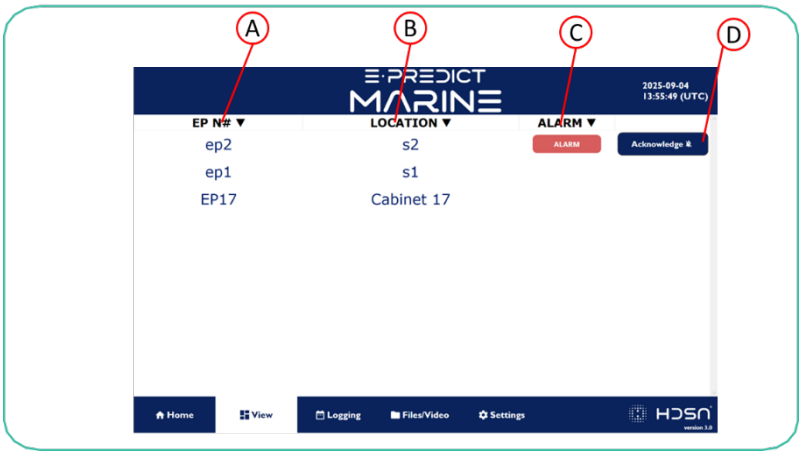
HOME SCREEN

The home screen displays the number of devices currently in alarm. If this number exceeds 0, an alarm flash/siren is triggered, and an alarm message is shown on the screen. The HMI box indicator is also activated.



A	Number of devices in alarm
B	Access to view screen
C	Access to history screen
D	Access to file/video screen
E	Access to settings screen

VIEW SCREEN



A	Number of E-PREDICT
B	Editable location field
C	Alarm indicator
D	Acknowledge button

The display screen displays real-time status of the **E-PREDICT V3 dry contacts** connected to the digital inputs of the input module (CT-121F). Each input module includes 16 digital inputs, allowing it to support up to **16 E-PREDICT V3 devices**. Users can configure the system to manage up to **512 inputs** in total. On the same page, if an alarm is triggered, an acknowledge button appears.

Important note: *The alarm disappears if it has been acknowledged on the HMI **AND** resolved on the E-PREDICT side (restart).*

LED Status Indicators

Each input is associated with an LED indicator showing one of the following states:

No indicator: The corresponding E-PREDICT device is operating normally, and no alarm is active.

Blinking RED: An alarm (overheating inside the electrical cabinet) is active (24V on the digital input), and it has not yet been acknowledged via the HMI. The E-PREDICT LED is RED (abnormal overheating in the electrical cabinet).

RED: An alarm (overheating inside the electrical cabinet) is always active (24V on the digital input) and has been acknowledged on the HMI. This status will disappear once the fault in the electrical cabinet has been resolved and the device will be restarted. The E-PREDICT LED is RED (abnormal overheating in the electrical cabinet).

Blinking ORANGE: An alert (E-PREDICT is not operational) is active (24V on the digital input), and it has not yet been acknowledged via the HMI. The E-PREDICT LED is FIXED ORANGE (internal failure) or BLINKING ORANGE (E-PREDICT fan does not rotate properly).

ORANGE: An alert (E-PREDICT is not operational) is always active (24V on the digital input) but has been acknowledged on the HMI. This status will disappear once the issue on the device has been resolved. The E-PREDICT LED is FIXED ORANGE (internal failure) or BLINKING ORANGE (E-PREDICT fan does not rotate properly).

Blinking GRAY: A power loss on E-PREDICT has been detected (24V on the digital input). The E-PREDICT LED is OFF (device not powered).

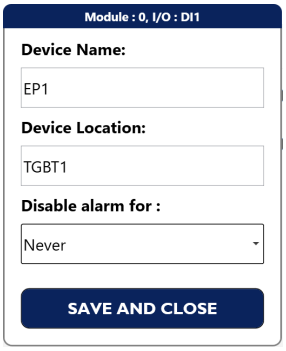
Yellow: The input is currently deactivated. This status can be manually set by the user which is useful during maintenance or operations that may generate environmental disturbances and lead to false alarms.

Temporarily disable an input:

To disable an entry (corresponding to one E-PREDICT):

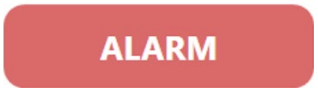
- VIEW page: click on the line to be disable. A popup appears where you can change the name, location and detection of the alarm (enable/disable for up to 24 hours for the normal mode).

- Only Chief Engineer mode can disable the line for undefined. To enable Chief Engineer mode, go to the “Settings” page and enter the password.



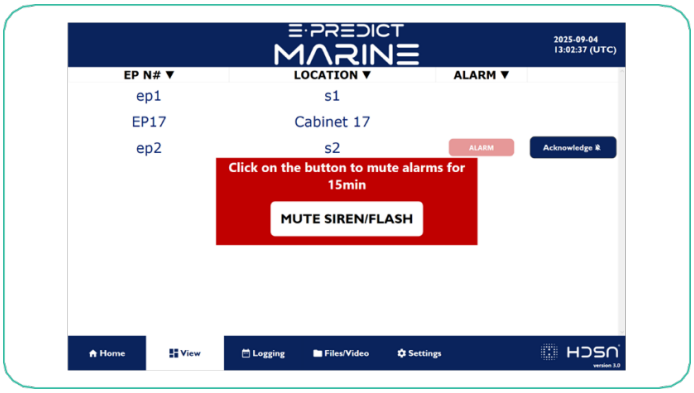
ALARM MANAGEMENT PROCEDURE – E-PREDICT

Alarm acknowlegment steps



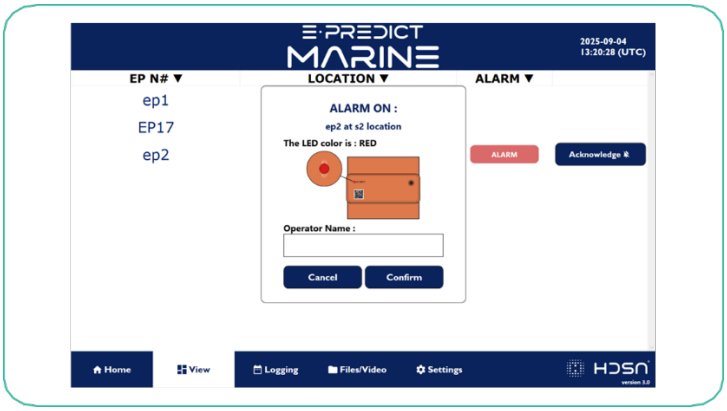
1. **Temporarily Disable the Siren/Flash**

   → The alarm siren/flash signal from the HMI can be shut down for **15 minutes**.



2. **Ack the alarm on the HMI**

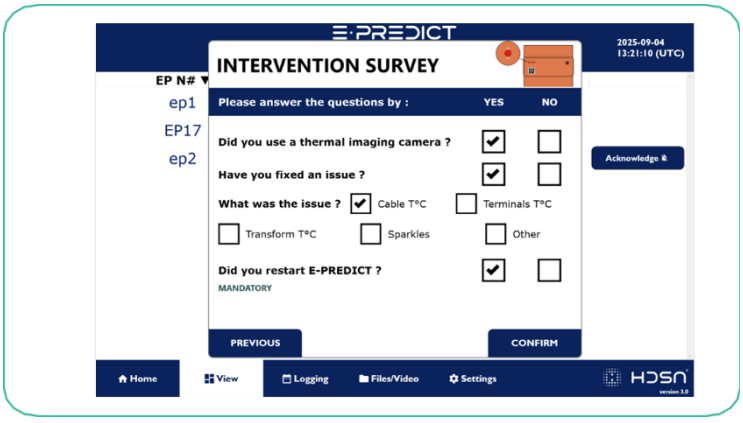
   → Select the relevant E-PREDICT from the list, the **operator's position** and click on confirm button.



3. **Follow HMI Guidance**
   → The HMI provides troubleshooting **advice and steps** to assist in handling the alarm.

The HMI displays a **questionnaire**:

- Was a **thermal camera** used?
- Have you fixed an issue?
- What was the issue?
- Did you restart E-PREDICT? (mandatory)



4. **Diagnose and Resolve the Issue**
   → Identify the cause of the alarm and **carry out corrective actions** on the E-PREDICT.

5. **Confirm Resolution**
   → Once resolved, the **E-PREDICT LED should turn green (after E-PREDICT restart)**, confirming a return to normal operation. If the LED does not return to green, **contact HDSN technical support**.

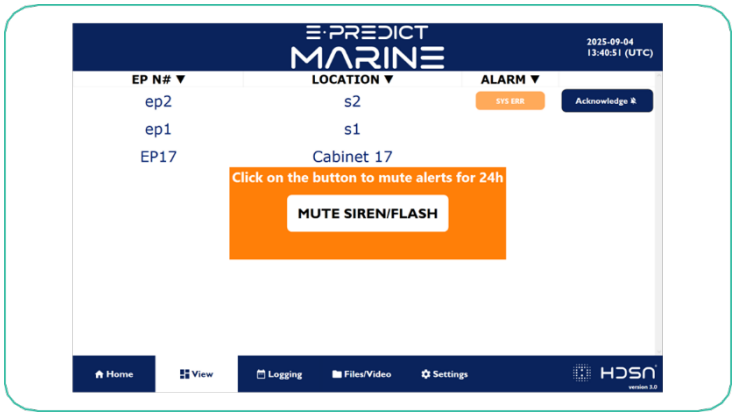
6. **Acknowledge the Alarm on the HMI**
   → The HMI will prompt the operator with **contextual questions** based on the detected issue to help document and guide the diagnosis.

⚠ **Important Note: If the alarm is disable but the issue remains unresolved, the alarm status will stay active.**

Alert acknowlegment steps

1. **Temporarily Disable the Siren/Flash**

   → The Alert siren/flash signal from the HMI can be shut down for **24 hours**.



2. **Ack the alert on the HMI**

   → **The procedure is the same as for the alarm**. There is no acknowledgement for a power failure on a product. The HMI will automatically acknowledge a product off alert as soon as power is restored. **Each alert and acknowledgement are logged**.

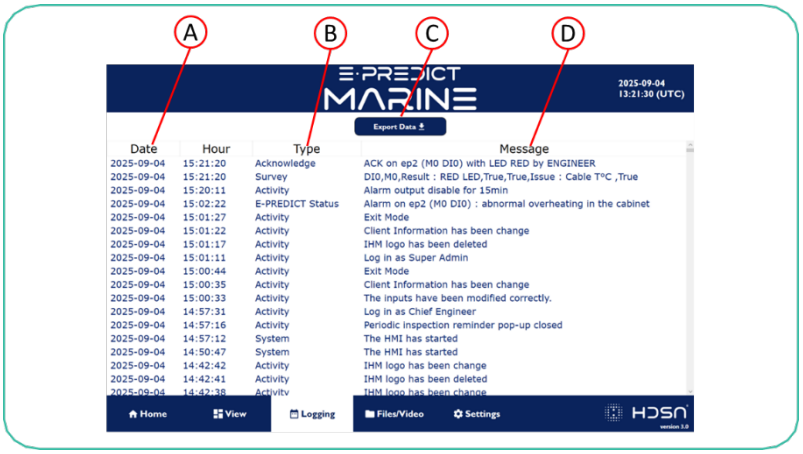
⚠ **Important Note: If the alert is disable but the issue remains unresolved, the alarm status will stay active.**

Specific case: power loss on E-PREDICT

This alert is automatically acknowledged when the device is power on.

LOGGING SCREEN

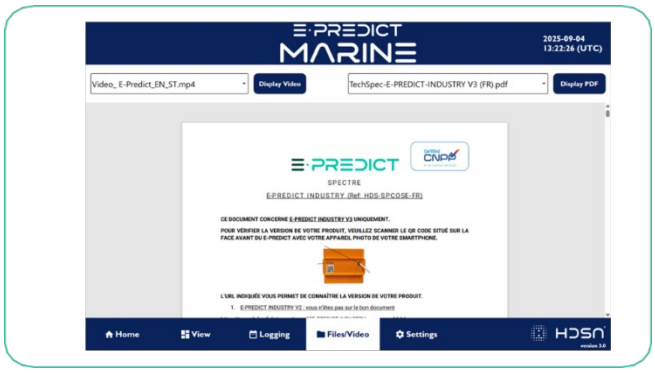
The history screen displays all alarms and their acknowledgements. The date and time of the event are indicated. The operator's name is indicated for each acknowledgement. Data can be exported (.csv) by plugging a USB key into the Panel PC. By clicking on the “Export Data” button, the data will be automatically saved to an external disk connected to the Panel PC (in this case, a USB key).



A	Date and time of event
B	Event Type
C	Data export button
D	Event message

FILES/VIDEO SCREEN

The Files/Video tab contains all the useful documents and media related to E-PREDICT. Users will find a video presentation of the equipment, its technical datasheet, and detailed procedures for the periodic and functional tests to be carried out to ensure proper system operation.

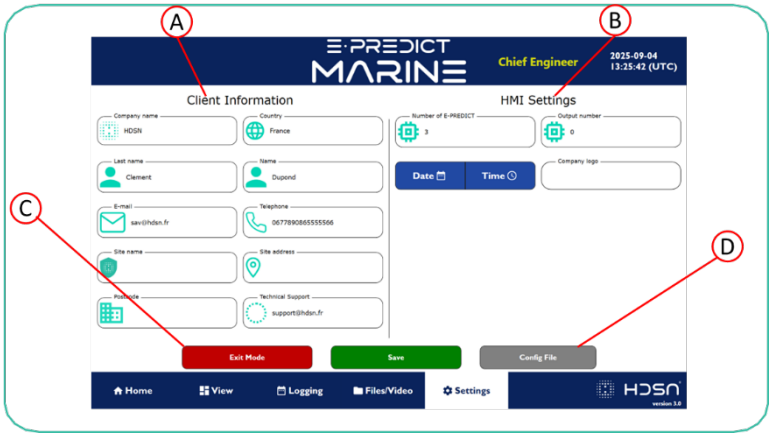


SETTINGS SCREEN

The **settings screen** centralizes both **customer information** and **interface configuration settings**. The Chief Engineer mode password is **112233**.
The user can modify the settings by logging on in Chief Engineer mode:

- **Chief Engineer mode (Password: 112233)**

The Chief Engineer can view and modify customer information and some HMI configuration parameters. The mode status is displayed at the top of the screen, in flashing yellow, to clearly indicate the current access level.

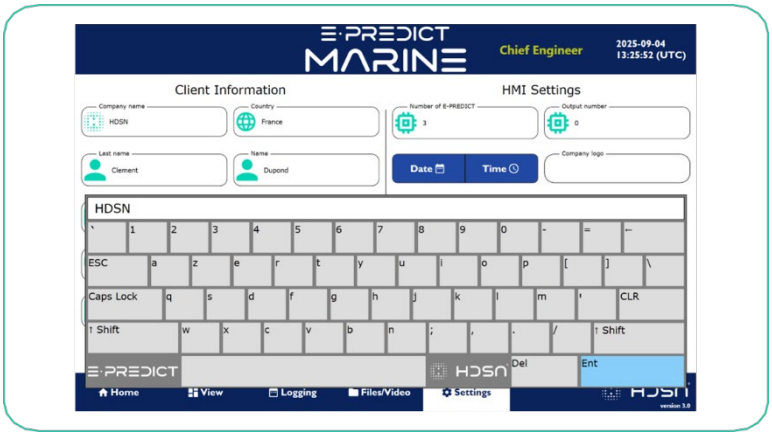


A	Customer information
B	HMI parameters
C	Exit mode button
D	Import/Export config button

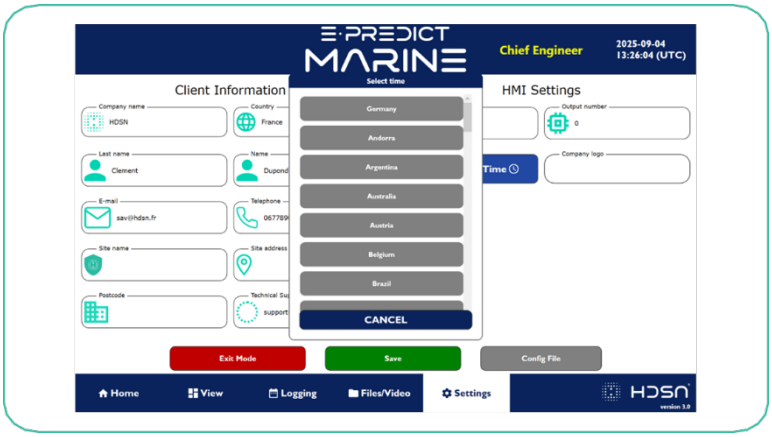
A. Customer information

Fill in the following fields with the relevant information:

- Company name: Indicate the social reason of the company.



- Country: (if necessary) Enter the country where the installation is based.



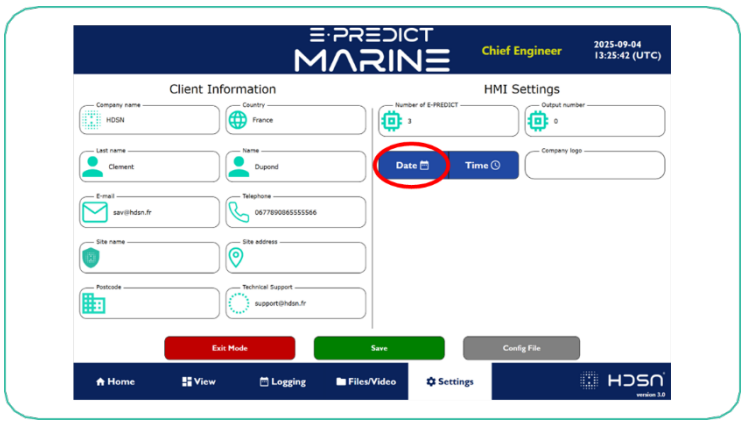
All the information below must be filled in:

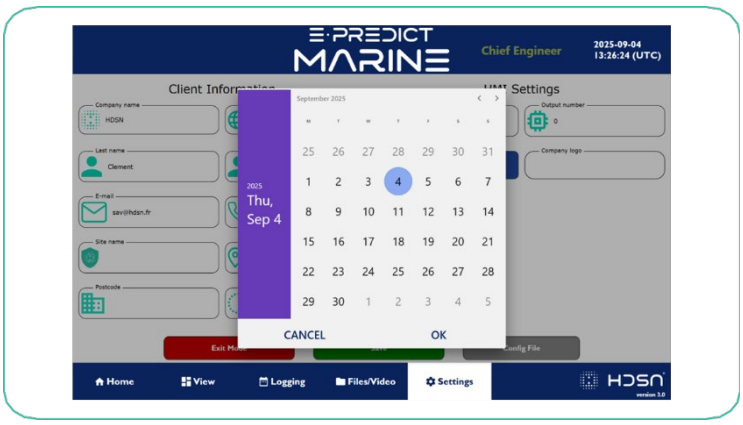
- Last Name: Enter the supervisor last name.
- Name: Enter the supervisor name.
- Email: Enter a valid email address for correspondence.
- Telephone number: Enter the telephone number.
- Site name: Specify the site, vessel or facility where the system is located.
- Company address: (if necessary) Enter the company's full address.
- Zip code: (if necessary) Enter the zip code corresponding to the address.
- Technical Support: Enter a valid email address for technical support

Save the information by pressing “Save”.

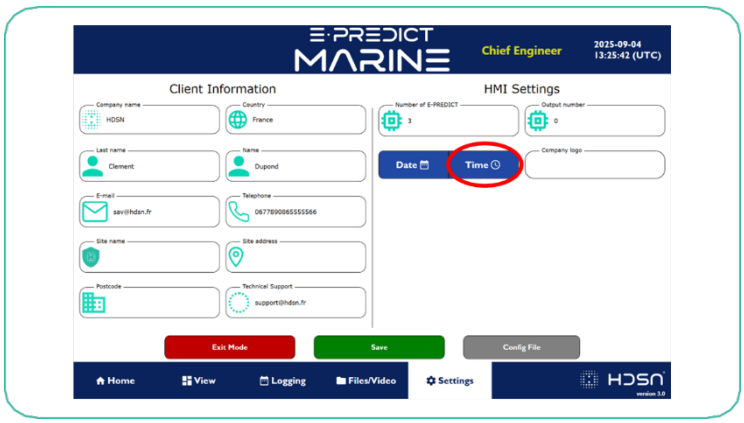
B. HMI settings

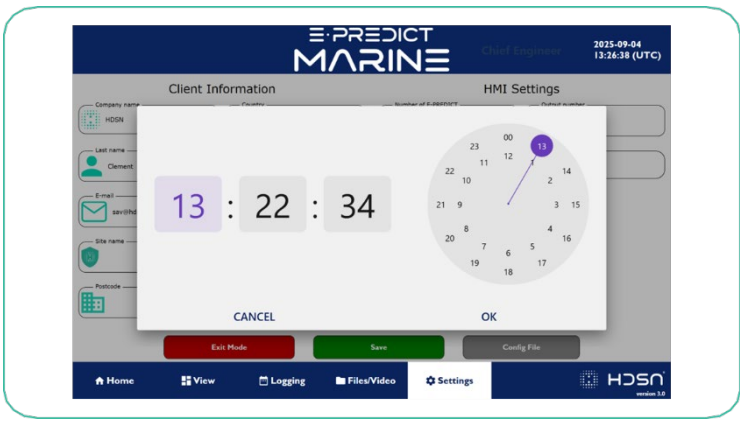
- Date: Update date using the “Date” button.



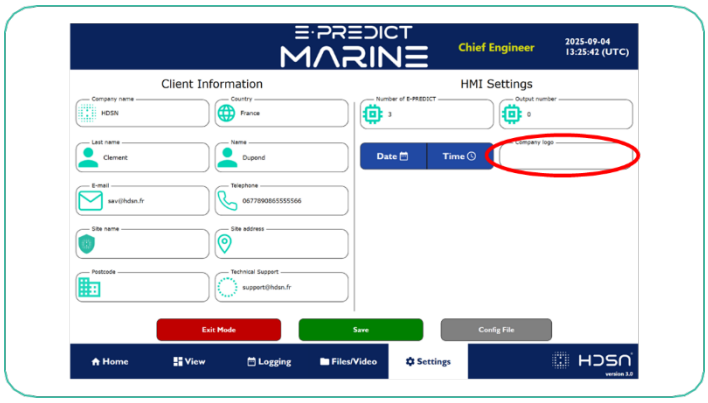


- Time: Update time using the “Time” button.

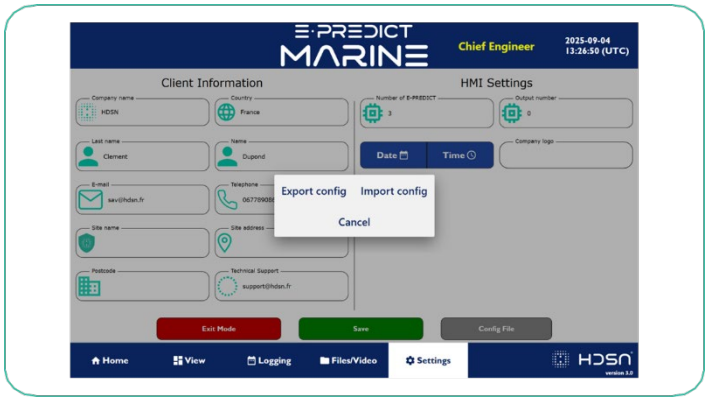




- Company logo: You can add your company logo to the Company Logo box. To do this, save your logo image as “logo_image” on a USB key, plug it into the HMI, then click on the Company Logo box: the logo will be displayed automatically. (Note: If the logo is white, it will be invisible to the eye because the background is white.)



- Import HMI config: You can only import an HMI configuration using a USB key. **Warning: Doing this will delete the current configuration.**



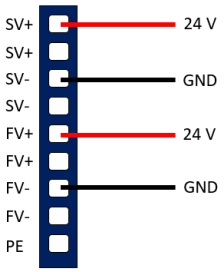
2. MODULES

ODOT CN-8031 ADAPTER

The CN-8031 is a Modbus-TCP network adapter that simultaneously accommodates up to 32 I/O expansion modules. The device can be used as a Daisy Chain. This must be connected via Ethernet to the HMI box.

Power Supply: 24V DC
Configured IP Input address: 192.168.0.6
Configured IP Output address: 192.168.0.45

ODOT CN-8031



Wiring

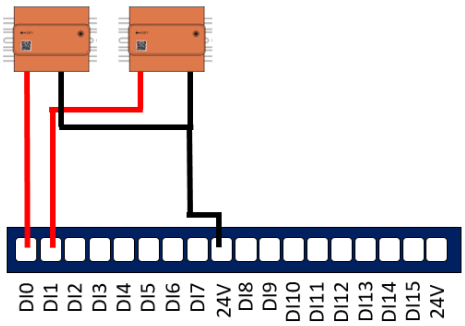
CT-121F INPUT MODULE

The CT-121F is a 16-input 24V module that attaches to the ODOT CN-8031. Up to 32 modules can be connected to the ODOT CN-8031. A maximum of 512 inputs can be read.

E-PREDICT must be wired to a module in such a way that:
- The red wire is connected to a DI input.
- The black wire is connected to the 24V.

When an input is powered, an LED lights up to indicate its activation.

CT-121F

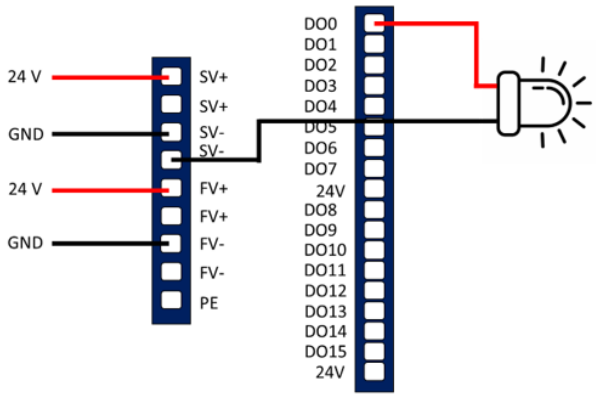


E-PREDICT Wiring

CT-222F OUTPUTS MODULE

The CT-222F is a 16 output 24V module that attaches to the ODOT CN-8031. When an output is powered, an LED lights up to indicate its activation. One of the module's outputs is wired to an alarm device to signal a problem detected by E-PREDICT, whether internal to the system or linked to an external factor.

CT-222F



Siren/flash wiring

HMI BOX

The HMI box displays the status of the E-PREDICTs connected to the CN-8031 ODOT and the CT-121F. It consists of a screen and a CT 222F module (connected to an ODOT CN-8031) to power an external device (e.g. a siren) in the event of an alarm.
Power supply: 230V AC
Dimensions: 41cm X 41cm X 20,5cm
Screen IP address: 192.168.0.10

HMI Box

3. MAINTENANCE

CABINET WITH ODOT CN-8031 & CT-121F

Module Replacement Procedure – CT-121F / CT-222F and ODOT CN-8031

If a **CT-121F digital inputs module** or a **CT-222F module** becomes non-functional, it must be replaced **by an authorized technician** and **in the exact same physical position** on the **ODOT CN-8031** communication adapter.
The HMI identifies and communicates with modules based strictly on their **physical position**.

⚠ **Important Warning:** Do **not shift or rearrange** modules after a failure. For example, if **Module 1** is defective, do **not** move **Module 2** to position 1 or **Module 3** to position 2. All modules must remain in their **original assigned positions**. Only the **defective module** should be replaced.

Replacing the ODOT CN-8031 Adapter

If the **ODOT CN-8031** adapter itself fails:

- It must be **replaced** with a new adapter.
- All existing **CT-121F modules** must be reinstalled **in the same order and position** on the new adapter.
- The replacement **ODOT CN-8031** must be **pre-configured** by **HDSN** prior to installation.

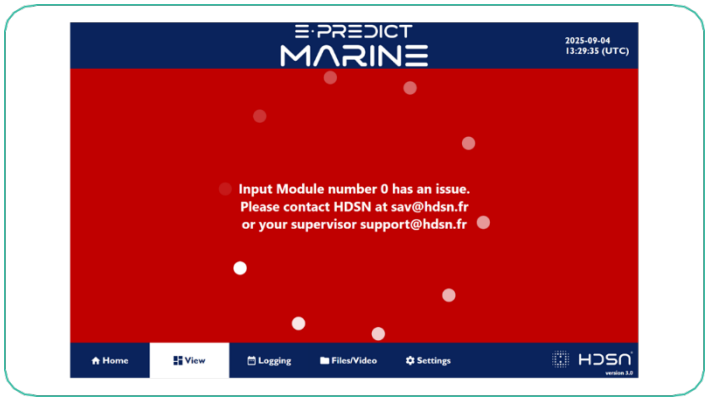
Please **contact HDSN** to obtain a properly configured replacement unit.

HMI SOFTWARE

Network problem:
If you encounter a problem with a disconnected input or output module, check the RG45 cables to ensure they are not damaged.

Module issue:

If you encounter a problem with a damaged module, check that it is properly clipped onto the backplane module (ODOT CN-8031). If not, contact HDSN.



Good

Not Good

if you encounter a problem with the software. Please restart the cabinet (open the cabinet and reset the circuit-breaker inside). If the problem persists, please contact HDSN.

To contact HDSN, please send an email to sav@hdsn.fr

HMI BOX

If any component of the HMI box is no longer working, please contact HDSN.

To contact HDSN, please send an email to sav@hdsn.fr

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