



E-PREDICT SUPERVISION CONTROL ACTION V5.0

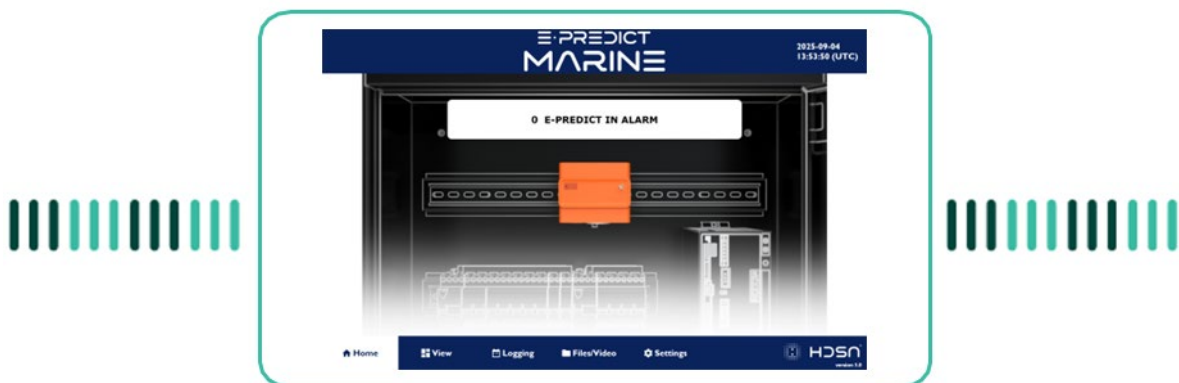
TECHNICAL SPECIFICATIONS - SCAPREDICT

06/10/2026

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

Key features:

- **View the status of each connected E-PREDICT in real time**
→ Monitor the digital input status of the Modbus module.
- **Trigger external alert devices**
→ Automatically activate external alarms (for example, sirens or flash beacons) in the event of:
 - ✓ Abnormal overheating detected inside an electrical cabinet
 - ✓ Loss of power to E-PREDICT
 - ✓ An E-PREDICT is not operational





E-PREDICT SUPERVISION CONTROL ACTION V5.0

Table of Contents

1. USE OF SCAPREDICT.....	3
START SCREEN	3
HOME SCREEN.....	3
MONITORING SCREEN.....	3
LOGGING SCREEN.....	8
FILES/VIDEOS SCREEN	8
SETTINGS SCREEN	9
PERIODIC INSPECTION OF E-PREDICT	13
2. MODBUS COMMUNICATION TABLES	16
COIL REGISTERS.....	16
DISCRETE INPUTS.....	16
HOLDING REGISTERS	16
3. MQTT COMMUNICATION	18
4. HARDWARE	19
5. MAINTENANCE	21



E-PREDICT SUPERVISION CONTROL ACTION V5.0

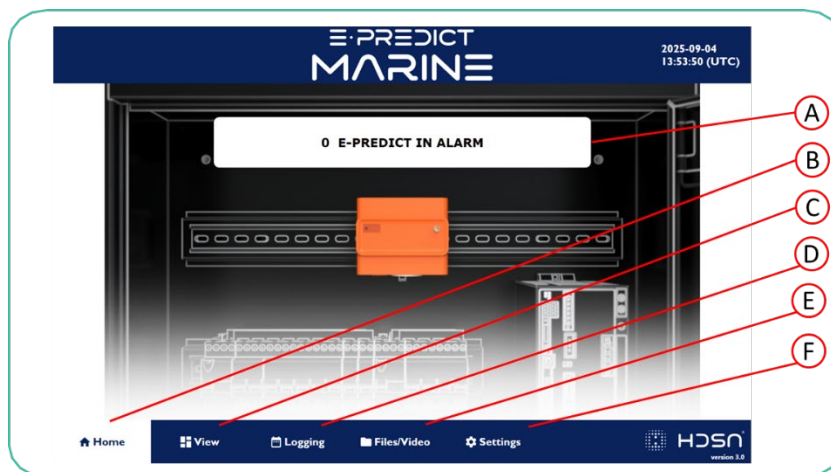
1. USE OF SCAPREDICT

START SCREEN

HDSN can preconfigure the screen using the information from the site layout study completed beforehand.

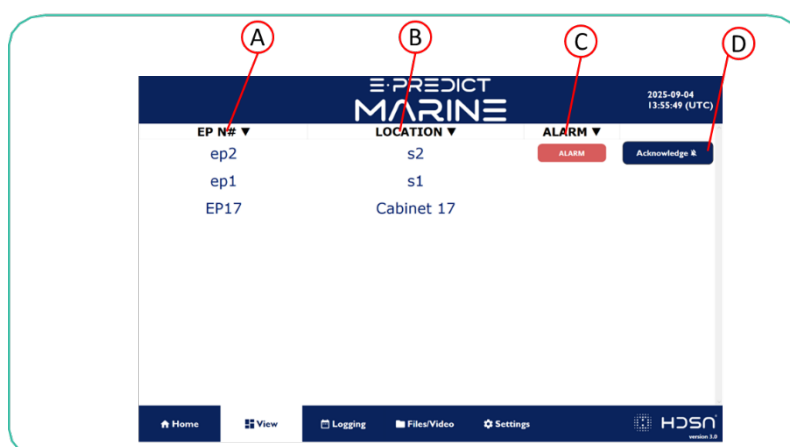
HOME SCREEN

The home screen displays the number of devices currently in an alarm state. If this number is greater than 0, an alarm siren is triggered and an alarm message is displayed on the screen. The SCAPREDICT indicator is also activated.



- A Number of devices in alarm
- B Access to HOME screen
- C Access to VIEW screen
- D Access to LOGGING screen
- E Access to FILE/VIDEO screen
- F Access to SETTINGS screen

MONITORING SCREEN



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



E-PREDICT SUPERVISION CONTROL ACTION V5.0

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

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

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, and it has not yet been acknowledged via the HMI. **The E-PREDICT LED is RED (abnormal overheating in the electrical cabinet).**

● **Fixed RED:** An alarm (overheating inside the electrical cabinet) is always active 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, and it has not yet been acknowledged via the HMI. **The E-PREDICT LED is FIXED ORANGE (E-PREDICT not operational) or BLINKING ORANGE (E-PREDICT fan does not rotate properly).**

● **Fixed ORANGE:** An alert (E-PREDICT is not operational) is always active 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 (E-PREDICT not operational) or BLINKING ORANGE (E-PREDICT fan does not rotate properly).**

● **Blinking GRAY:** A power loss on E-PREDICT has been detected. The E-PREDICT LED is OFF (device not powered).

● **Fixed YELLOW:** The input is currently inhibited. 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.



E-PREDICT SUPERVISION CONTROL ACTION V5.0

Temporarily inhibit an input (yellow status, see above):

To inhibit an input (corresponding to an E-PREDICT):

- VIEW page: click the line to disable. A pop-up window appears, allowing you to change the name, location and alarm detection setting (inhibit for a maximum of 24 hours).

Module : 0, I/O : DI1

Device Name:

EP1

Device Location:

TGBT1

Disable alarm for :

Never

SAVE AND CLOSE

- Only Chief Engineer/Admin mode can inhibit a line indefinitely (see SETTINGS SCREEN). To activate Admin mode, go to the "Settings" tab and enter the password.

ALARM MANAGEMENT PROCEDURE – E-PREDICT



Alarm acknowledgement steps

1. Temporarily mute the siren/flash

→ The alarm siren and/or SCAPREDICT flashing signal can be muted for 15 minutes by clicking the MUTE SIREN/FLASH button.

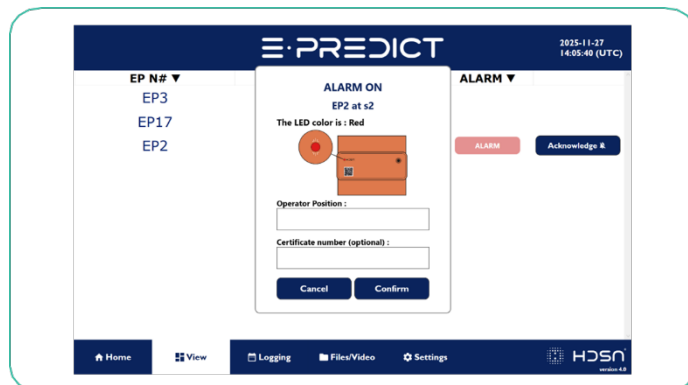


E-PREDICT SUPERVISION CONTROL ACTION V5.0

2. Acknowledge the alarm on SCAPREDICT

Click the “Acknowledge” button for the E-PREDICT in alarm.

→ Enter the operator position and click the Confirm button.

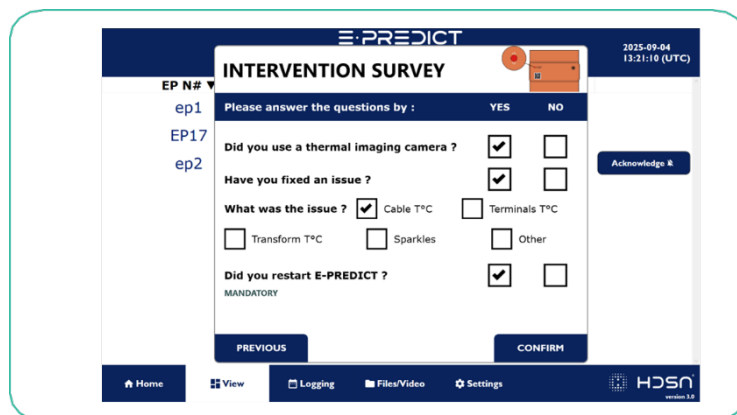


3. Follow SCAPREDICT guidance

→ SCAPREDICT provides troubleshooting advice and steps to help manage the alarm.

SCAPREDICT displays a questionnaire:

- Was a thermal camera used?
- Have you corrected 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 take the necessary corrective action on E-PREDICT.

5. Confirm issue resolution

→ Once the issue has been resolved and E-PREDICT restarted, the E-PREDICT indicator should turn green, confirming a return to normal operation. If the indicator does not turn green again, contact HDSN technical support (sav@hdsn.fr).

⚠ Important note: if the alarm is muted but the issue persists, the alarm status remains active.



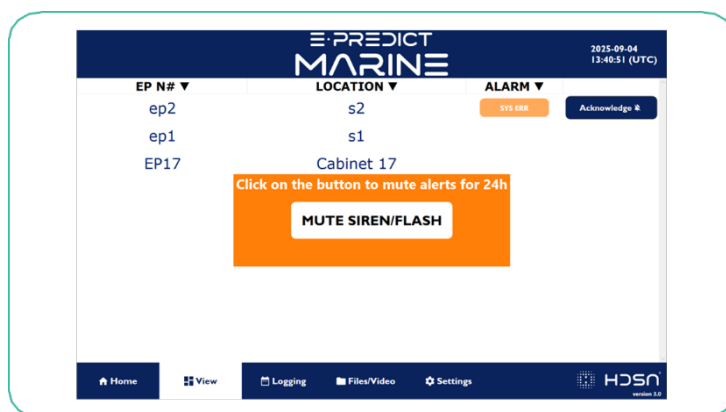
E-PREDICT SUPERVISION CONTROL ACTION V5.0

Alert acknowledgement steps

SYS ERR

1. Temporarily mute the siren/flash

→ The alert siren and/or SCAPREDICT flashing signal can be muted for 24 hours by clicking the MUTE SIREN/FLASH button.



2. Acknowledge the alert on SCAPREDICT

→ The procedure is the same as for an alarm. Each alert and acknowledgement is logged.

⚠ Important note: if the alert is muted but the issue persists, the alert remains active.

Special case: loss of power to E-PREDICT

SYS OFF

There is no acknowledgement for a product power failure. SCAPREDICT automatically acknowledges a product-off alert as soon as power is restored.

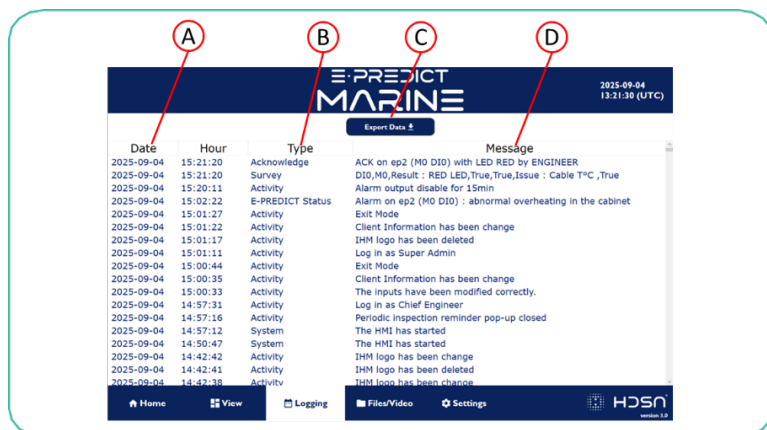


E-PREDICT SUPERVISION CONTROL ACTION V5.0

LOGGING SCREEN

The logging screen displays all alarms and their acknowledgements. The date and time of the event are displayed. The operator name is shown for each acknowledgement.

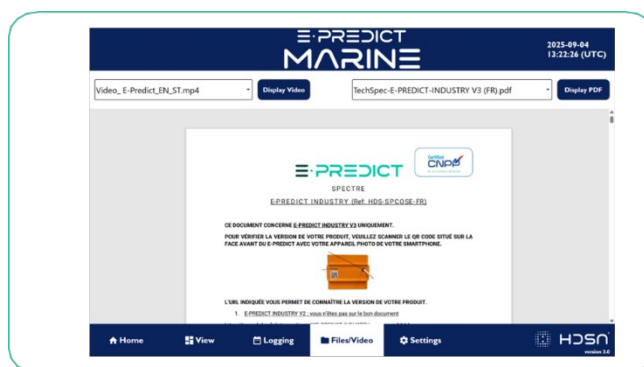
Data can be exported (.csv) by connecting a USB drive to the Panel PC. Clicking the “Export data” button automatically saves the data to an external drive connected to the Panel PC (in this case, a USB drive).



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

FILES/VIDEOS SCREEN

The Files/Videos screen contains all documents and useful media related to E-PREDICT. Users will find a product presentation video, its technical datasheet and detailed periodic and functional test procedures needed to ensure correct system operation.





E-PREDICT SUPERVISION CONTROL ACTION V5.0

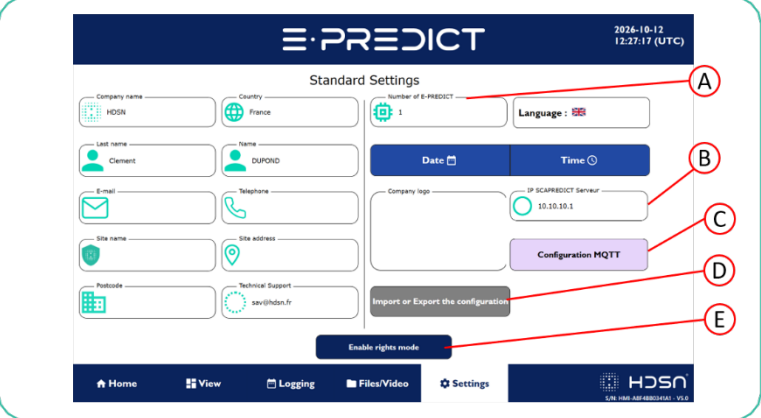
SETTINGS SCREEN

The settings screen centralizes customer information and interface configuration settings. The Chief Engineer/administrator mode password is **112233**.

The user can modify settings by logging in in Chief Engineer/Administrator mode:

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

The Administrator/Chief Engineer can view and modify customer information and certain SCAPREDICT configuration settings. The mode status is displayed at the top of the screen in flashing yellow to clearly indicate the current access level.

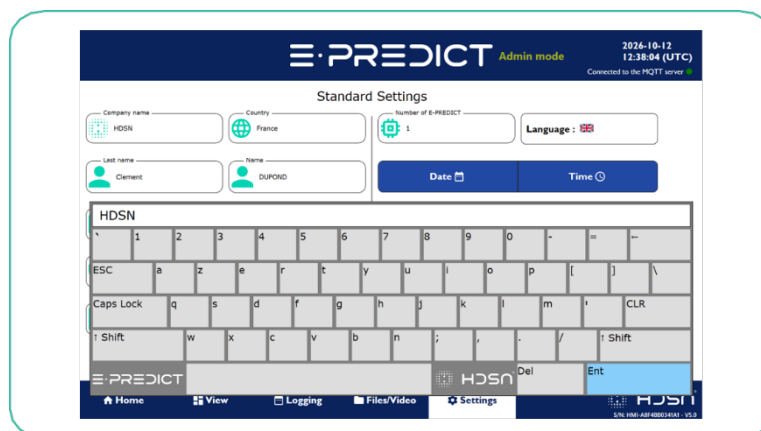


A E-PREDICT configuration
B IP configuration in server mode
C MQTT configuration
D Import/Export config button
E Enable/Exit mode button

A. Customer information

Fill in the following fields with the relevant information:

- Company name: Enter the company name.



E-PREDICT SUPERVISION CONTROL ACTION V5.0

- Country: (if required) Enter the country where the installation is located.

All information below can be entered:

- Company name: Enter the company name.
- Last name: Enter the supervisor's last name.
- First name: Enter the supervisor's first name.
- Email: Enter an email address for contacting the manager.
- Telephone number: Enter the manager's telephone number.
- Site name: Specify the site or facility where the system is located.
- Company address: Enter the company address.
- Postal code: Enter the postal code corresponding to the address.
- Technical support: Enter a technical-support email address.

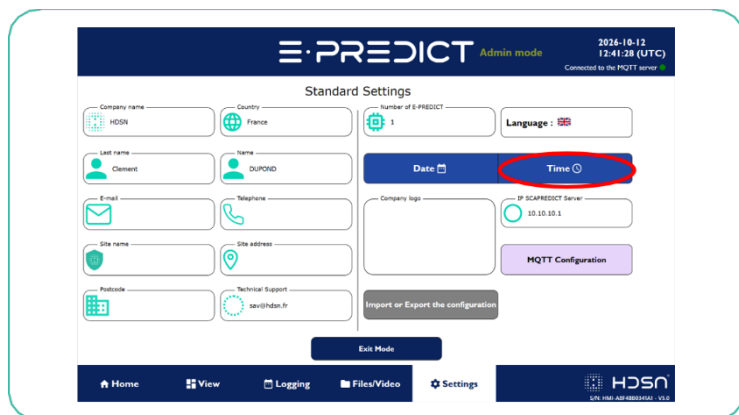
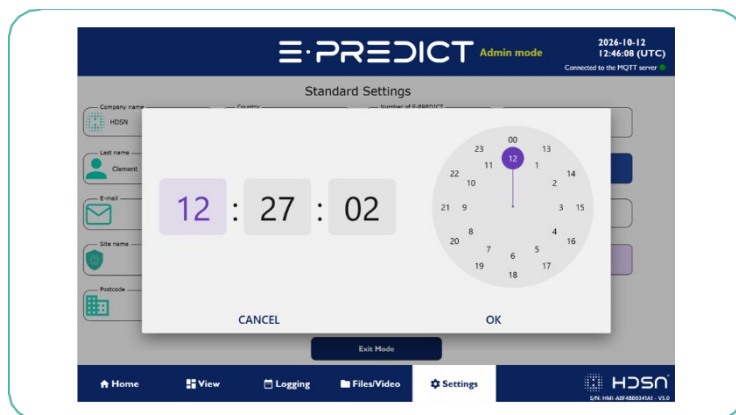
B. SCAPREDICT settings

- Date: Update the date using the "Date" button.

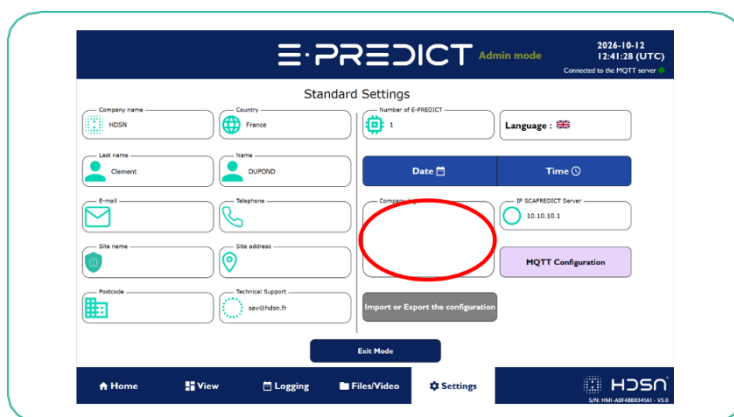


E-PREDICT SUPERVISION CONTROL ACTION V5.0

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



- Company logo: You can add your company logo in the “Company Logo” field. To do so, save the logo image as “logo_image” on a USB drive, connect it to SCAPREDICT, then click the “Company Logo” field: the logo is displayed automatically. (Note: if the logo is white, it will be invisible because the background is white.)



- SCAPREDICT configuration import/export: You can import or export a configuration using a USB drive.
Warning: this operation deletes the current configuration.





E-PREDICT SUPERVISION CONTROL ACTION V5.0

- **Number of E-PREDICT devices:** You can change the number of E-PREDICT devices connected to SCAPREDICT by clicking the “Number of E-PREDICT devices” field. A window appears with a list of input backplane and input-card modules, allowing you to enable or disable the digital input.

Standard Settings

Company name: HDSN Country: France **Number of E-PREDICT devices: 1** Language: EN

Last name: Clement Name: DUPOND Date: Time: Company logo: IP SCAPREDICT Server: 10.10.10.1 MQTT Configuration: Import or Export the configuration

Exit Mode

Home View Logging Files/Video Settings HDSN

SELECT THE E-PREDICT ON EACH MODULE

IP1: 192.168.0.6 Module 0

I/O	Name	Output Type	Output Control
DI0	EP1	Standard	Configuration
DI1			
DI2			
DI3			
DI4			
DI5			
DI6			
DI7			

CANCEL CONFIRM

Exit Mode

Home View Logging Files/Video Settings HDSN

Once an input has been enabled, you can configure an output to activate for an alarm, an alert or a product shutdown by clicking the “Configuration” button.

By default:

- Output DO0 is activated during an alarm.
- Output DO1 is activated during an alert (sys err).
- Output DO2 is activated during a product shutdown (sys off).

SELECT THE OUTPUT FOR EACH EVENT

IP21: 192.168.0.45 Module 0

I/O	Alarm	Alert	OFF
DO0	☒	☐	☐
DO1	☐	☒	☐
DO2	☐	☐	☒
DO3	☐	☐	☐
DO4	☐	☐	☐
DO5	☐	☐	☐
DO6	☐	☐	☐
DO7	☐	☐	☐

CANCEL CONFIRM

Exit Mode

Home View Logging Files/Video Settings HDSN



E-PREDICT SUPERVISION CONTROL ACTION V5.0

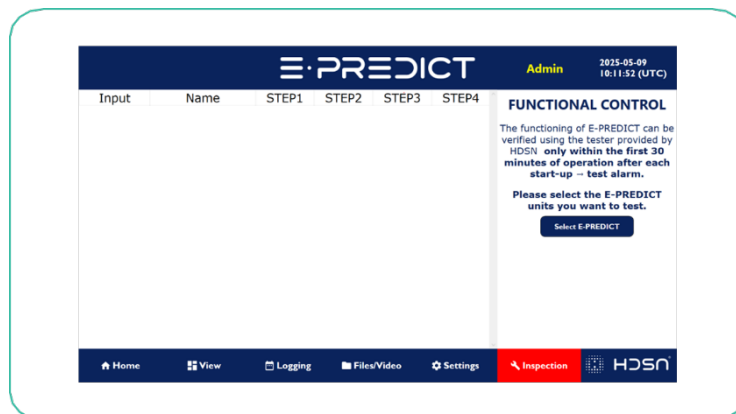
PERIODIC INSPECTION OF E-PREDICT

If one or more E-PREDICT devices must undergo a periodic inspection, follow this procedure:

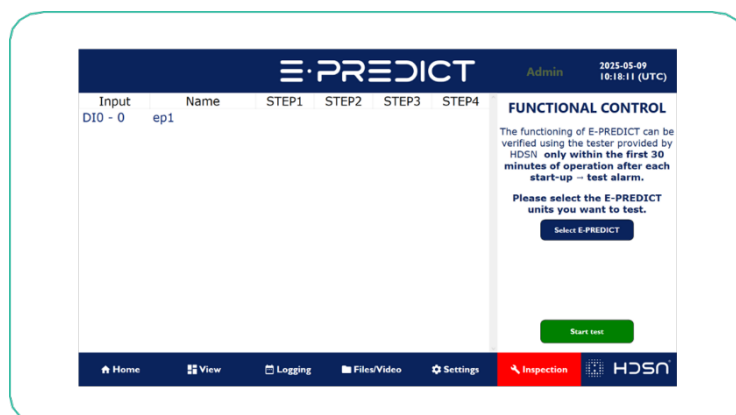
- Go to the **"Settings"** tab.
- Log in as Chief Engineer/Admin (Password: **112233**).
- Click the new **"Inspection"** tab, which should appear in red at the bottom right of the screen.



- Once in the "Inspection" tab, select the E-PREDICT devices to test by clicking the **"Select"** button.



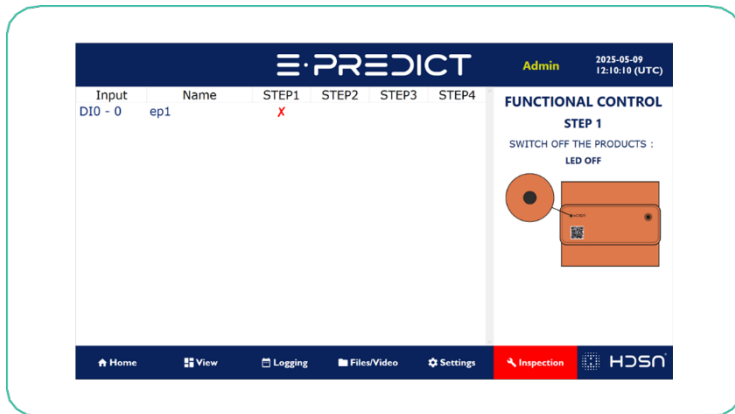
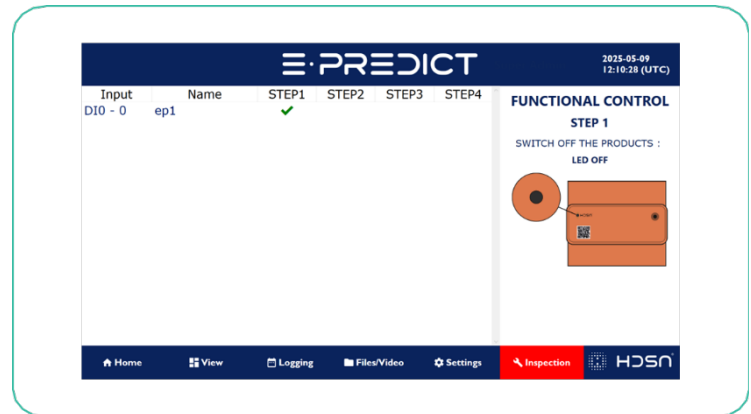
- Once one or more E-PREDICT devices have been selected, click **"Start test"**.





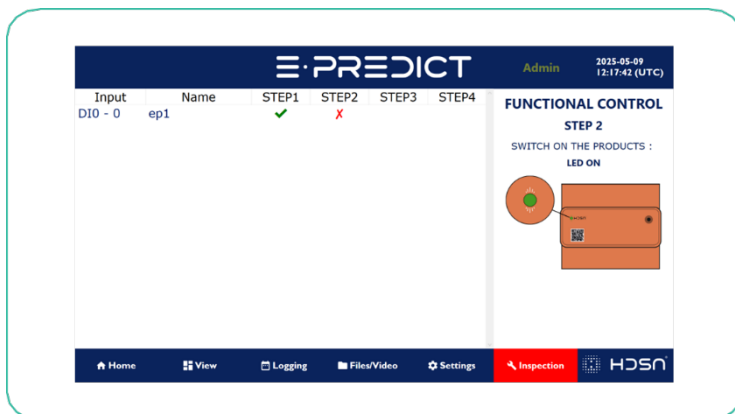
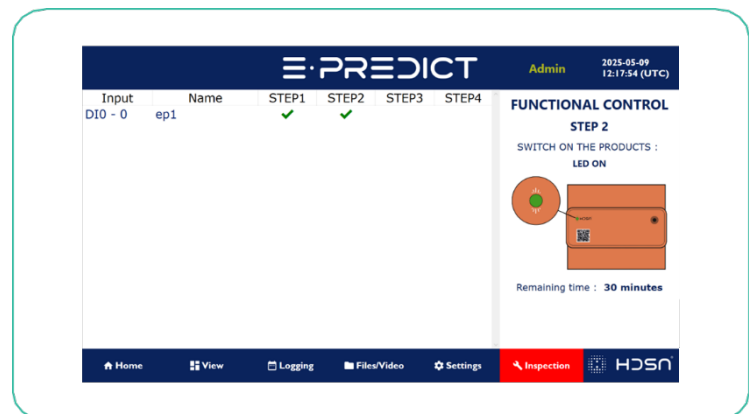
E-PREDICT SUPERVISION CONTROL ACTION V5.0

- **STEP 1:** Switch off the E-PREDICT device(s).

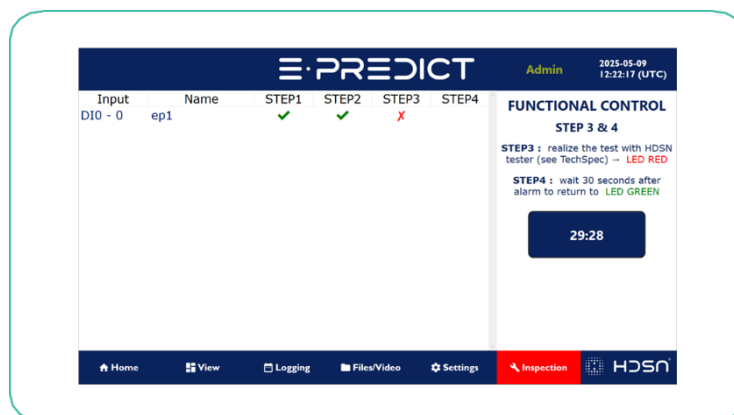


- **STEP 2:** Switch on the E-PREDICT device(s).

Note: A 30-minute timer starts as soon as the first E-PREDICT device is switched on.



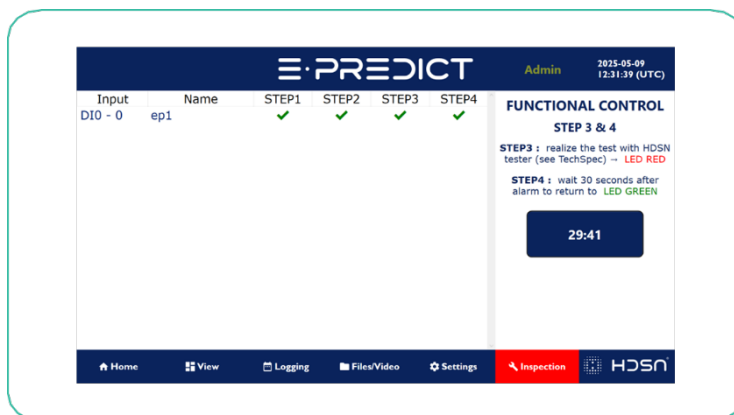
- **STEP 3:** Perform the periodic inspection test in accordance with the TechSpec procedure.





E-PREDICT SUPERVISION CONTROL ACTION V5.0

- **STEP 4:** Once all E-PREDICT devices have triggered an alarm and returned to normal, the test is validated.



- The start page (E-PREDICT selection) must reappear. Once this is done, go to the “**Logging**” tab and check that a validated periodic-test log is present for each selected E-PREDICT device.

Warning: an E-PREDICT device that is not selected during a periodic test and generates an alarm/alert causes an alarm/alert to be displayed on SCAPREDICT.

E-PREDICT SUPERVISION CONTROL ACTION V5.0

2. MODBUS COMMUNICATION TABLES

This section describes the SCAPREDICT MODBUS registers in server mode. The default server IP address is 10.10.10.1. Panel PC server IP address: 10.10.10.1

COIL REGISTERS

Offset	Group	Description
0 to 511	Acknowledgement	E-PREDICT ACK
512	Acknowledgement	ACK ALL E-PREDICT

DISCRETE INPUTS

Offset	Group	Description
0	System Mode	Enabled permissions
1	MQTT information	MQTT (0 = disabled, 1=enabled)
2	MQTT network	MQTT status (0 = OK, 1= error)

HOLDING REGISTERS

System information:

Offset	Type	Group	Description
0	INT	System information	Number of input backplanes
1	INT	System information	Number of output backplanes
2	INT	System information	Number of E-PREDICT devices in alarm
3	INT	System information	Number of E-PREDICT devices in alert
4	INT	System information	Number of E-PREDICT devices powered off
5	INT	System information	Number of acknowledged E-PREDICT alarms
6	INT	System information	Number of acknowledged E-PREDICT alerts
7	INT	System information	Number of E-PREDICT devices under test
8	INT	System information	Number of inhibited E-PREDICT devices
9	INT	System information	Time set for a periodic test (seconds)

Backplane information:

Offset	Type	Group	Description
100-103	WORDS	Backplane information	Input backplane information #1
...	WORDS	Backplane information	Input backplane information #x
136-139	WORDS	Backplane information	Input backplane information #10
140-143	WORDS	Backplane information	Output backplane information #1
...	WORDS	Backplane information	Output backplane information #x
176-179	WORDS	Backplane information	Output backplane information #10

E-PREDICT SUPERVISION CONTROL ACTION V5.0

The information for a backplane is shown below:

Example with input backplane #1 (@100-103)		
Word	Type	Description
1	INT	Backplane status (0=absent, 1=OK, 2=Network error, 3=System error)
2	INT	Number of connected input modules (0 to 32)
3-4	DWORD	Input module error (0=OK, 0< Error

E-PREDICT information:

Offset	Type	Group	Description
2001-2040	WORDS	E-PREDICT info	E-PREDICT information #1
2041-2080	WORDS	E-PREDICT info	E-PREDICT information #2
2081-2120	WORDS	E-PREDICT info	E-PREDICT information #3
...	WORDS	E-PREDICT info	E-PREDICT information #x
22441-22480	WORDS	E-PREDICT info	E-PREDICT information #512

The information for an E-PREDICT device is shown below:

Example with E-PREDICT #1 (@2001-2040)		
Word	Type	Description
1	INT	E-PREDICT index (1 → 512)
2 to 21	STRING	Location (40 ASCII characters, 2 characters per word)
22	INT	E-PREDICT status
23	INT	Input backplane index (1 → 10)
24	INT	Input module index (0 → 31)
25	INT	Next periodic test date (Year)
26	INT	Next periodic test date (Month)
27	INT	Next periodic test date (day)
28-37	STRING	Latest questionnaire results (20 ASCII characters, 2 characters per word)
38-40	STRING	Reserved

E-PREDICT states are shown below:

E-PREDICT status				
Disconnected	OFF	OK	Alert	Alarm
0	1	2	3	4
E-PREDICT status				
Alarm still active on E-PREDICT but acknowledged on SCAPREDICT	Alert still active on E-PREDICT but acknowledged on SCAPREDICT		Inhibited	Under periodic test
5	6		7	8



3. MQTT COMMUNICATION

SCAPREDICT can transmit data over the Internet using the MQTT protocol.

The connection to the MQTT broker is configured directly from the SCAPREDICT interface. To configure it, the user must log in as an administrator and enter the required connection parameters.

MQTT Configuration

The MQTT protocol is enabled on the SCAPREDICT ☒

Host <input type="text" value="Exemple.mqtt.com"/>	Port <input type="text" value="8883"/>
Username <input type="text" value="hdsn"/>	Password <input type="password" value="....."/>
Topic <input type="text" value="hdsn"/>	ENCRYPTION (TLS) ☒

CERTIFICATES ☒

If the SCAPREDICT connection to the MQTT broker requires certificates, the user must enable the corresponding option and then click the “Certificates” button.

The user must then connect a USB drive containing the following three certificate files, whose names must be strictly observed: **ca.crt**, **client.crt**, **client.key**

CERTIFICATES

To import the MQTT certificates, insert a USB stick containing the required files into a folder named "SCAPREDICT_MQTT". Each file must be named exactly as shown on the corresponding button below.

<input type="button" value="SERVER CERTIFICATE
ca.crt"/>	<input type="button" value="Delete the certificate"/>
<input type="button" value="CLIENT CERTIFICATE
HMI-A8F4BB0341A1.crt"/>	<input type="button" value="Delete the certificate"/>
<input type="button" value="CLIENT KEY
HMI-A8F4BB0341A1.key"/>	<input type="button" value="Delete the certificate"/>

Note: HDSN does not provide an MQTT broker. Customers wishing to use this feature must have their own broker and are responsible for its configuration and administration.

To strengthen the security of exchanges, data published by SCAPREDICT through MQTT is encrypted using the AES algorithm before transmission.

Each customer has its own decryption material. This material is not included in this documentation and is provided separately by HDSN.



4. HARDWARE

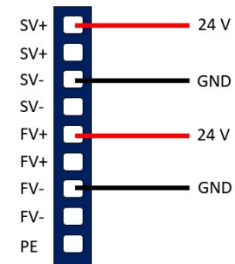
ODOT CN-8031 ADAPTER

The CN-8031 is a Modbus TCP network adapter that can accommodate up to 32 I/O expansion modules simultaneously. The device can be used in a daisy chain. It must be connected to SCAPREDICT via Ethernet.

Power supply: 24 V DC



ODOT CN-8031



Wiring

INPUT MODULE

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

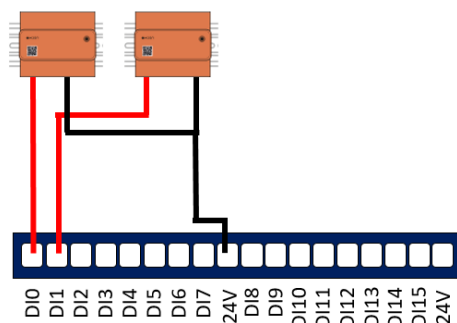
E-PREDICT must be wired to a module as follows:

- The red wire is connected to a DI input.
- The black wire is connected to 24 V.

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



CT-121F



E-PREDICT Wiring



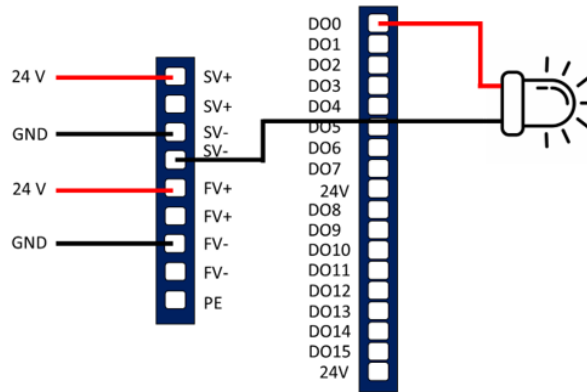
E-PREDICT SUPERVISION CONTROL ACTION V5.0

CT-222F OUTPUT MODULE

The CT-222F is a 24 V, 16-output module connected to the ODOT CN-8031. When an output is powered, an LED lights up to indicate activation. One of the module outputs is connected to an alarm device to signal any issue detected by E-PREDICT, whether internal to the system or related to an external factor.



CT-222F



Siren/flash wiring

HMI CABINET

The HMI cabinet displays the status of E-PREDICT devices connected to the ODOT CN-8031 and CT-121F. It consists of a screen and a CT-222F module (connected to an ODOT CN-8031) for powering an external device (for example, a siren) in the event of an alarm.

Power supply: 230 V AC



HMI Cabinet



5. MAINTENANCE

CABINET WITH ODOT CN-8031 & CT-121F

Module replacement procedure – CT-121F / CT-222F and ODOT CN-8031

If a CT-121F digital-input module or CT-222F module stops working, it must be replaced by an authorized technician and installed in exactly the same physical location on the ODOT CN-8031 communication adapter.

SCAPREDICT identifies and communicates with modules strictly according to their physical position.

⚠ Important warning: Do not move 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 positions. Only the defective module must be replaced.

Replacing the ODOT CN-8031 adapter

If the ODOT CN-8031 adapter itself fails:

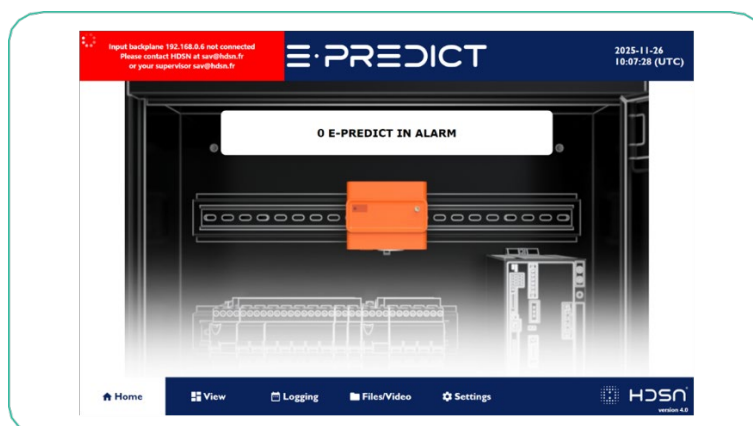
- It must be replaced with a new adapter.
- All existing CT-121F modules must be reinstalled in the same order and at the same position on the new adapter.
- The replacement ODOT CN-8031 adapter must be preconfigured by HDSN before installation.

Contact HDSN to obtain a correctly configured replacement unit.

SCAPREDICT SOFTWARE

Network issue:

If a module is disconnected, check the condition of the RJ45 cable and make sure it is not damaged. If it is in good condition, verify that the cable has not been plugged into the wrong Ethernet port on the Panel PC.

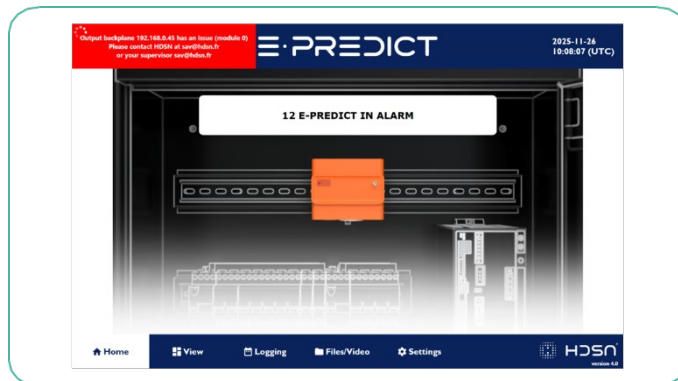




E-PREDICT SUPERVISION CONTROL ACTION V5.0

Module issue:

If a module is damaged, first check that it is properly clipped onto the Modbus backplane (ODOT CN-8031). If no fault is found, contact HDSN.



Good



Not Good

If you experience a software issue, restart the cabinet (open the cabinet and reset the circuit breaker inside). If the issue persists, contact HDSN.

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

HMI CABINET

If any component of the HMI cabinet no longer works, contact HDSN.

Use a backup power supply for SCAPREDICT.

HDSN

HIGH PREDICTION TECHNOLOGIES
612 avenue Auguste Baron
13500 MARTIGUES, FRANCE

