

I.C.E

Integrator of Energy Calculations

S.M.A.R.T

Followed by Adaptive Modelling of Search for Tendency

General used manual



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I.C.E SYSTEM

I °- INTRODUCTION

The ICE (integrator of calculations energy) system, French patent, is intended to monitor and inform the refrigeration energy derivatives.

Monitoring ICE program is based on models from the numerous campaigns of the measurements by the office of ADT Plus studies and expertise of facilities of refrigeration.

Each ICE system is designed to monitor one or two plants regardless refrigerated (*HT or LT*) at a time, depending on the selected configuration.

II °- COMPONENTS OF I.C.E SYSTEM

The ICE system is an electrical panel includes:

- A P.L.C..... réf. SAÏA: PCD1.M2160
- An analog card réf. SAÏA: PCD2.W315
- A touch screen réf. CAREL: PGDT07000F120

The elements to be connected on the Terminal Board of the electrical box are the following:

- An outdoor T ° sensor (PT1000: -50/+105°C)..... réf. EO2S: 510.14100

☞ **In the case of the use of a fluid type HFC, HCFC and ammonia:**

- One LP pressure sensor (-1/10 bar - 4/20mA) réf. EO2S: 520.99165
- One HP pressure sensor (-1/32 bar - 4/20mA) réf. EO2S: 520.99166

☞ **In the case of the use of R744 (CO2) Subcritical:**

- One LP pressure sensor (-1/32 bar - 4/20mA) réf. EO2S: 520.99166
- One HP pressure sensor (-1/48 bar - 4/20mA) réf. EO2S: 520.99167

☞ **In the case of the use of the R744 (CO2) Transcritical:**

- One LP pressure sensor (-1/48 bar - 4/20mA) réf. EO2S: 520.99167
- One HP pressure sensor (-1/160 bar - 4/20mA)..... réf. EO2S: 520.99234

Note: these additional elements are marketed by the company EO2S, but the installer has the choice to provide its usual products according the imperative of respect the characteristics described.

No difference can be accepted on these characteristics to ensure the accuracy of the system.



Nota:

The pressure sensors are to be installed on the installation by couple according to the number of production¹:

- 1 for low pressure (LP),
- 1 for high pressure (HP).

A single temperature probe is required by ICE panel.

A synthesis of return of compressor of each monitored production market must also be connected to the ICE panel.

However, in the case of the "*stacking of energy*" option or the 'SMART' system, an IOM module replaces the synthesis of returns of each generation market (to a maximum of 5 compressors by production²).

The option 'accumulation of energy' or 'SMART' system consists of the following:

- IOM module réf. SAïA : PCD7.L130
- A communication card réf. SAïA : PCD7.F110S

Type of cables for connections:

We recommend using:

- For the bus:
A cable for data transmission 1 or 2 twisted pairs (section 0,5 mm²) shielded with braid with a low specific capacity (< 100mF/m) and a 120Ω impedance; 100 kHz (example: « Belden » type 8762, section 20AWG, *or equivalent*).
- For pressure sensors:
A shielded cable HIFLEX CY 2 x 0,5 mm², *or equivalent*.
- For temperature sensors:
Up to 50 m away: a minimum section of 0,75 mm² cable.
Between 50 m and 100 m of distance: a minimum section of 1,5 mm² cable.
More than 100 m of distance: a cable of at least 2,5 mm².

¹ Or circuit.

² For more than 5 compressors per powerpack : **contact us and plan an additionnel module IOM.**

SCHEMA ELECTRIQUE

☐ Option 1 : ICE
 ☐ Une production

☐ Option 2 : SMART // ICE + SMART
 ☐ Deux productions

Ce plan est notre propriété et ne peut être reproduit ou communiqué sans notre autorisation

Système ICE + SMART

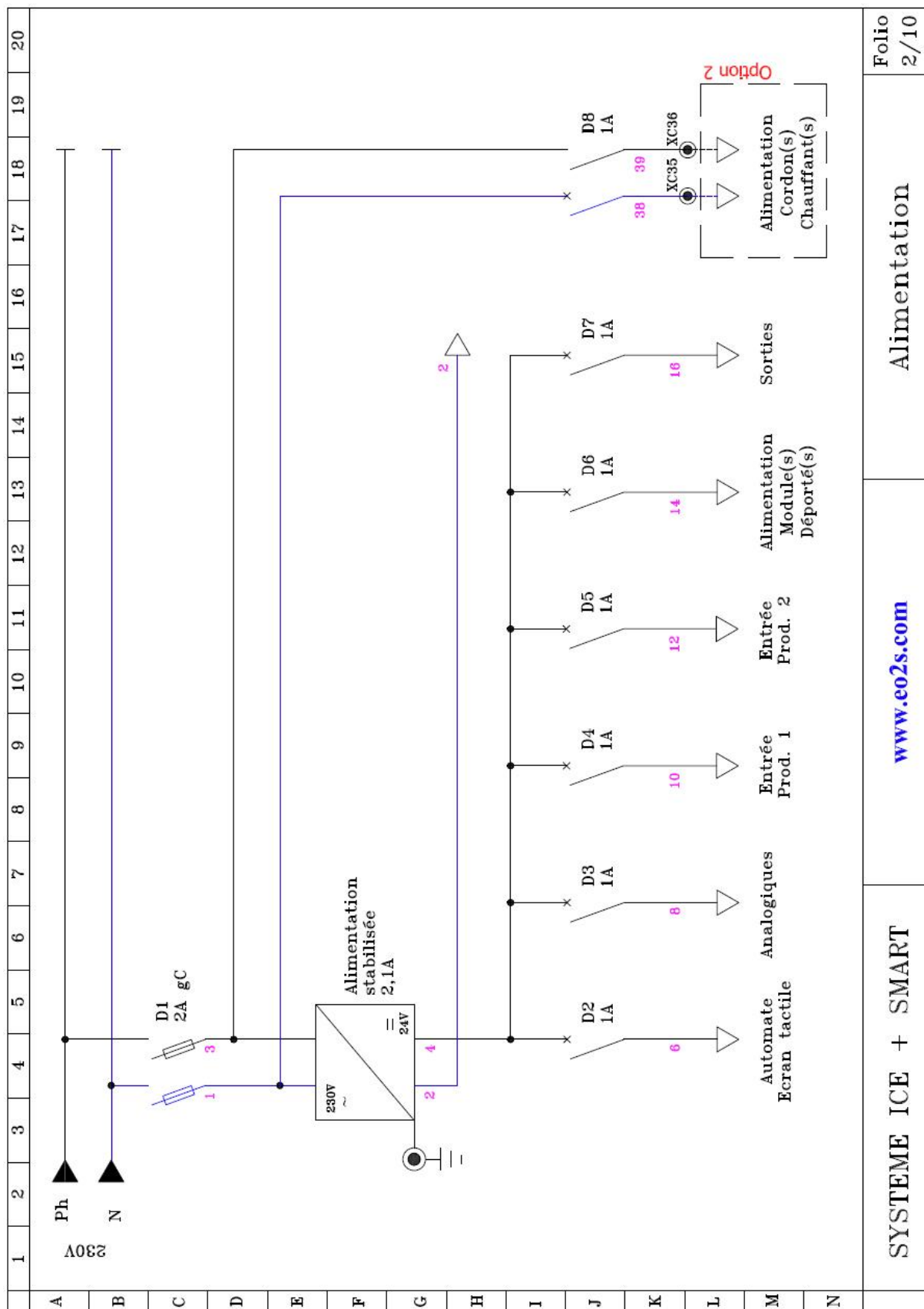


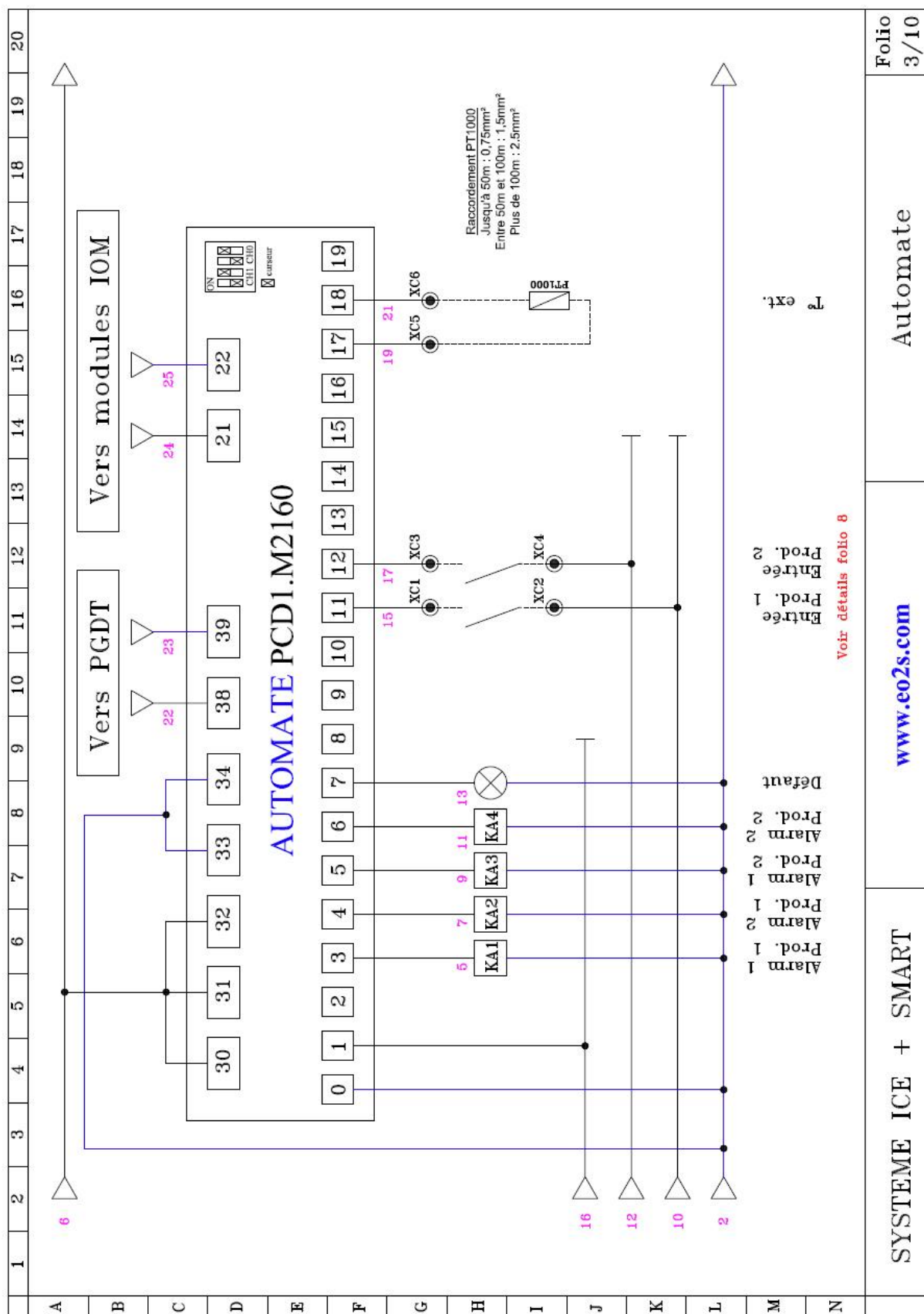
EO2S SAS
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 Tél. : +33 (0)1 49 56 14 46 • Fax : +33 (0)1 69 51 78 24
<http://www.eo2s.com>

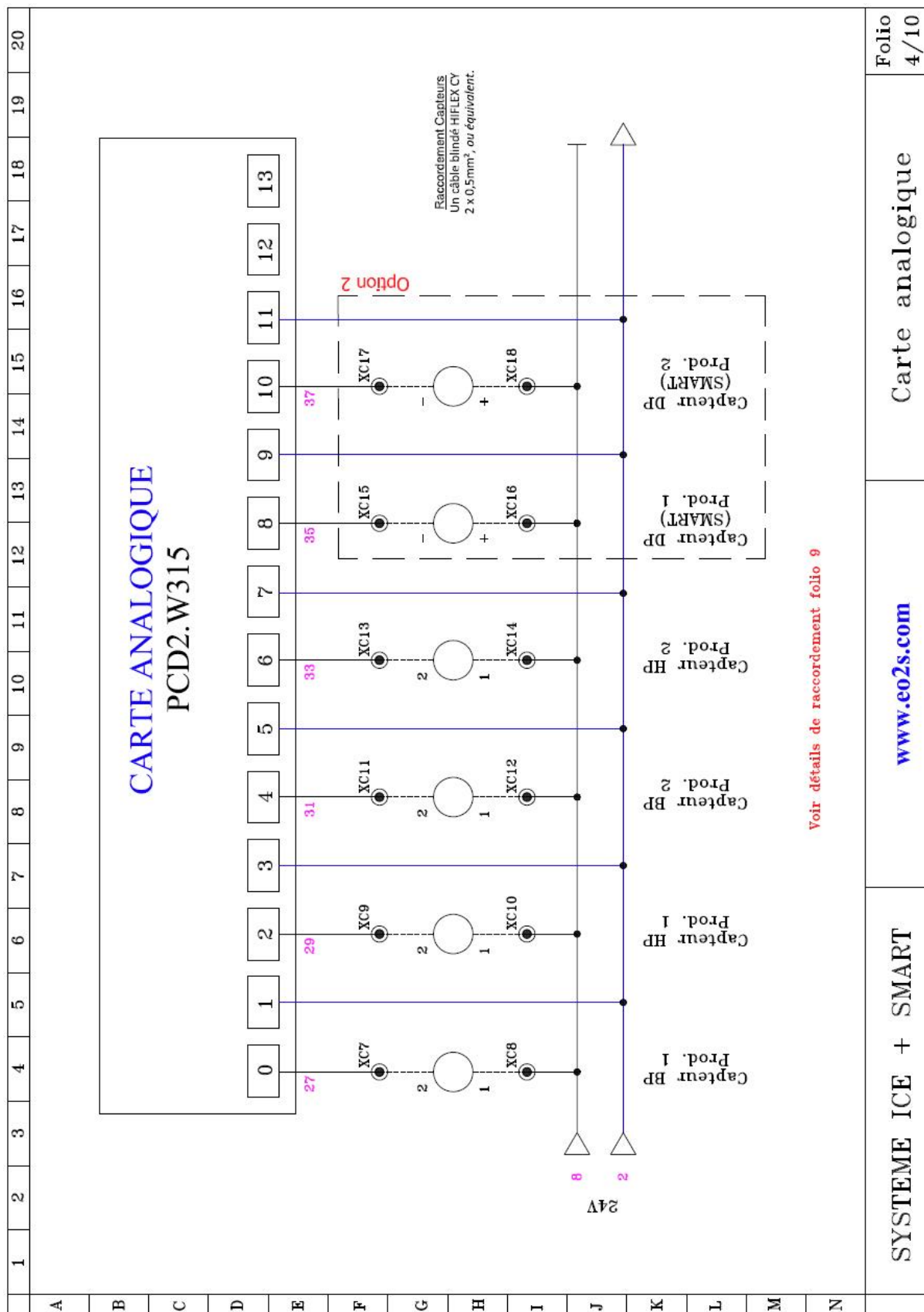
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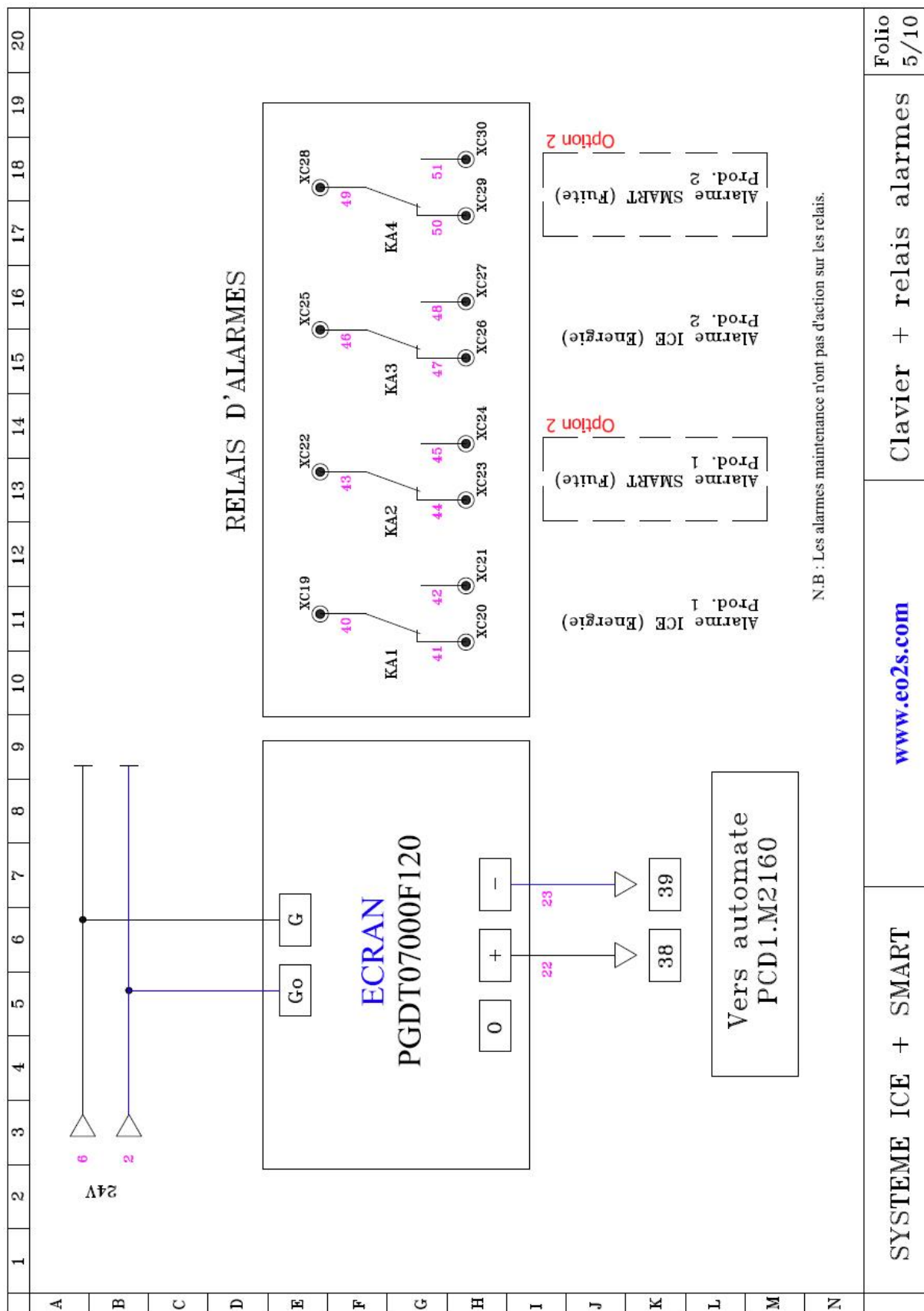
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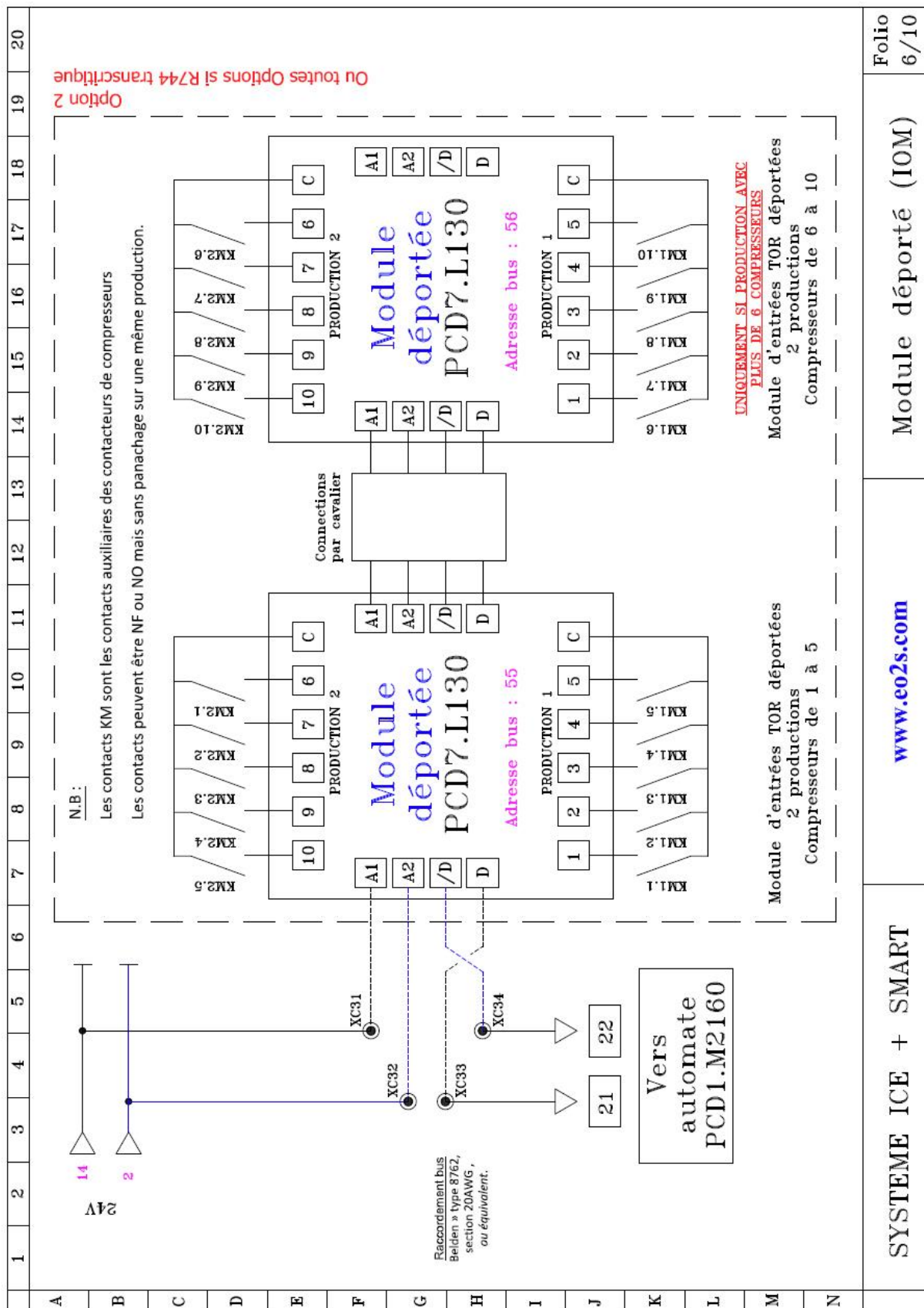
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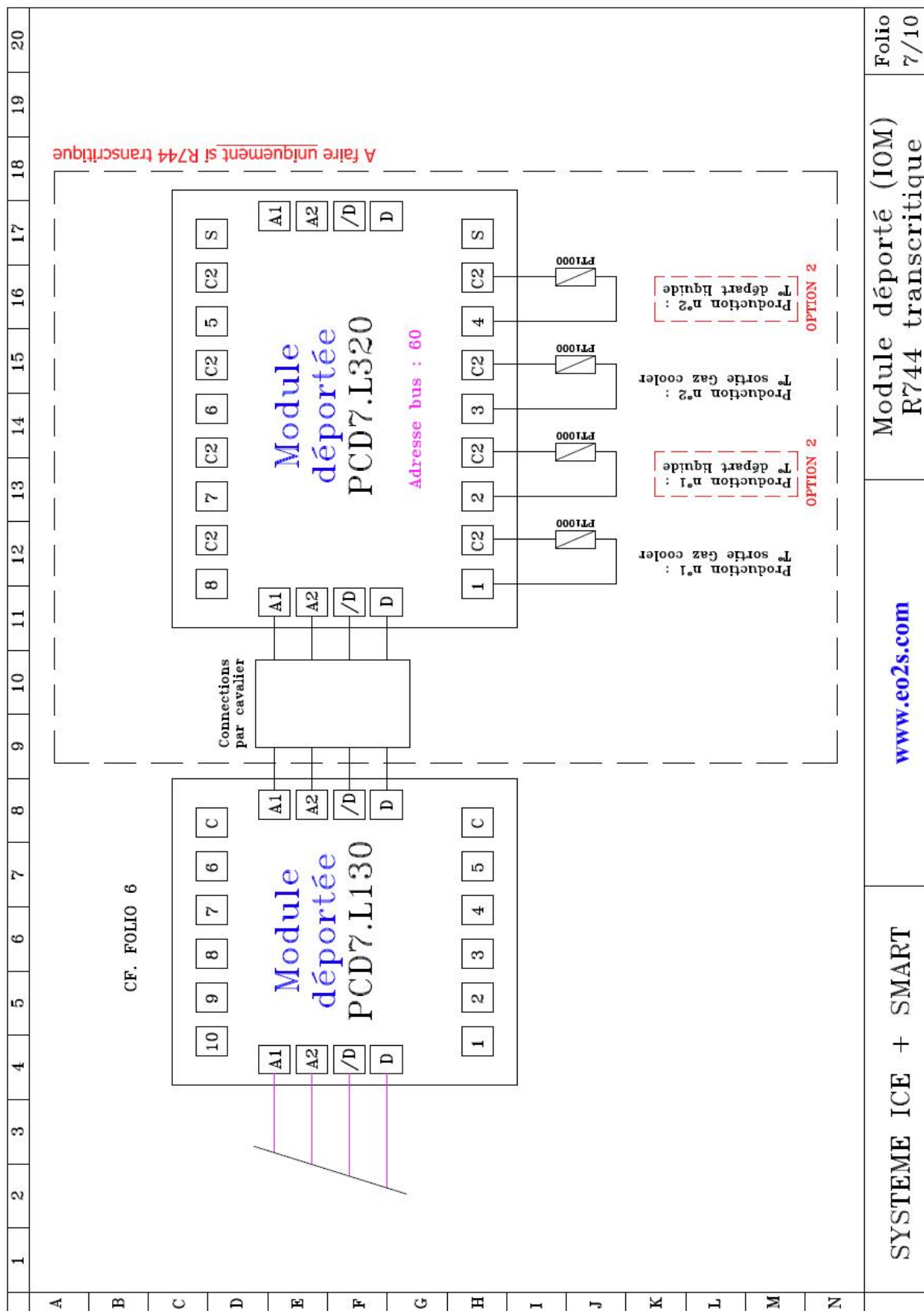




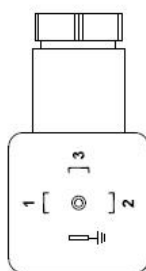
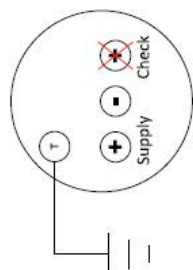








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A	Option 1 (voir Folio 3)																						
B	PRODUCTION FRIGORIFIQUE N°1																						
C	XC1 XC2 Signifie --> contacteur compresseur 1 contacteur compresseur 2 contacteur compresseur ... contacteur compresseur X																						
D																							
E																							
F																							
G	PRODUCTION FRIGORIFIQUE N°2																						
H	XC3 XC4 Signifie --> contacteur compresseur 1 contacteur compresseur 2 contacteur compresseur ... contacteur compresseur X																						
I																							
J																							
K																							
L																							
M	Option 2 (voir Folio 3)																						
N	Les bornes XC1 à XC4 sont utilisées pour renvoyer l'état de la récupération de chaleur (active ou inactive).																						
SYSTEME ICE + SMART													www.eo2s.com							Entrées Productions		Folio 8/10	

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	EO2S Capteur de pression 520.99XXX 										EO2S Capteur différentiel de pression FKCW33V5 										Option 2 (voir Folio 4) <u>N.B. :</u> Ne pas prendre la borne (+) du signal "Check" mais "Supply"										www.eo2s.com		Détails des capteurs		Folio 9/10

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www.eo2s.com												Détails du bornier									Folio 10/10	

Dans le cas de l'OPTION 2, les bornes XC1 à XC4 sont utilisées pour renvoyer l'état de la récupération de chaleur (active ou inactive)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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Warning

The alarms contacts (terminals XC19 to XC30) must be connected in very low voltage and directly on the digital input of alarm delay.

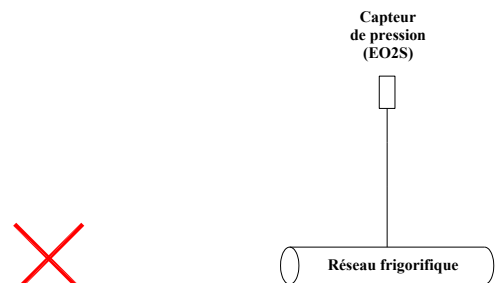
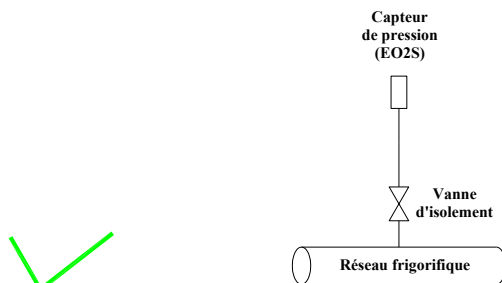
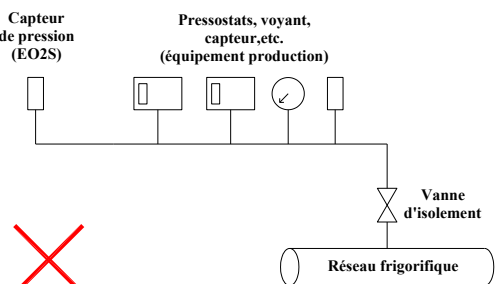
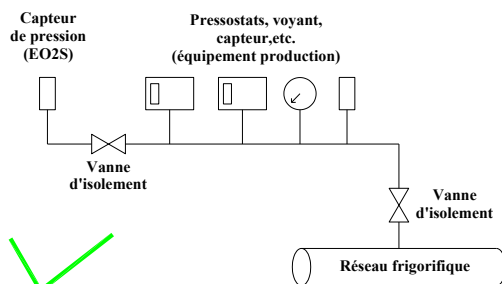
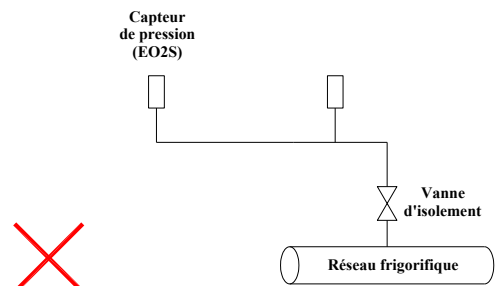
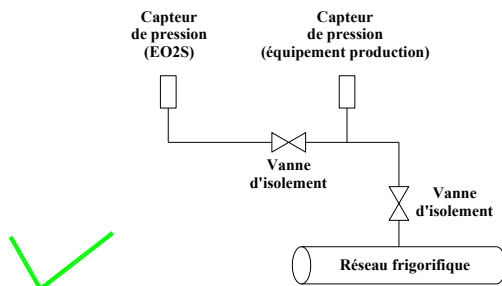
IV ° - PRESSURE SENSORS CONNECTIONS (SPECIFICITY)

For good control and maintenance of the ICE system, it is imperative that an isolation valve to allow isolate each ICE sensor independently of the other equipment's pressures sensors (e.g. pressure switches, etc.) of production considered.

Furthermore, it is recommended not to use lengths of hoses / copper networks unsuitable to the situation at the site.

We recommend a maximum length of 50cm between the isolation valve and pressure sensor.

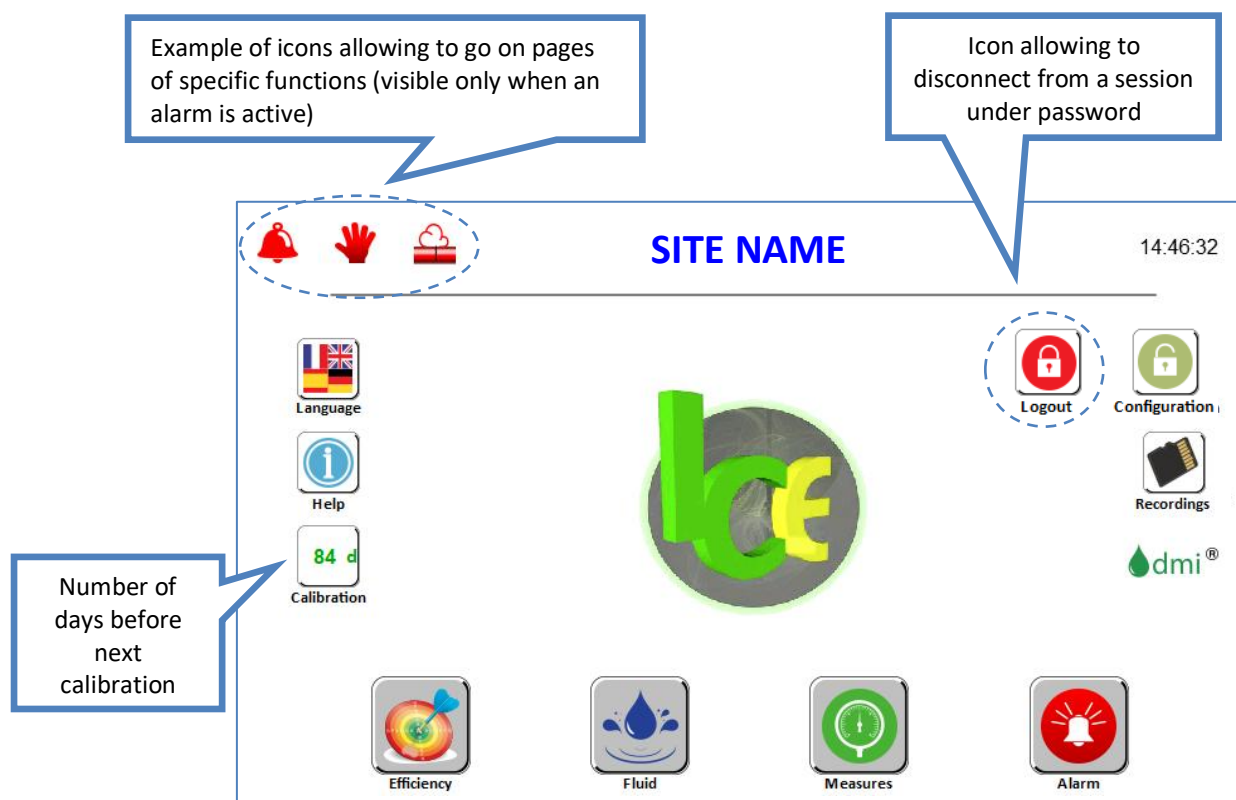
A few examples:



V °- TOUCH SCREEN DESCRIPTION

It is a touch screen on which of the buttons, icons allow you to navigate from page to page. Some of these buttons are visible only when the function is active (ex: "Alarm").

a) « Home » Page.



The main functions of the « Home » page gives access to the following pages:

- « Efficiency » page,
- « Fluid » page,
- « Measures » page,
- « Alarm » page,
- « Configuration » page,
- « Recordings » page,
- « Language » page,
- « Help » page,

Various icons are also present:



Indicates the presence of an alarm - *link to the « Alarm » page,*



Indicates the presence of an alarm of maintenance - *link to the « Alarm » page,*



Specifies the presence of leak refrigerant alarm - *link to the « Alarm » page.*

b) « Measures » Page.

MEASURES

20:37:58

Outdoor temp. (°C) : **14.5**

Production 1	Production 2
LP Pressure (bar rel) : 1.0	LP Pressure (bar rel) : 0.9
Evaporating temp. (°C) : -9.7	Evaporating temp. (°C) : -31.4
HP Pressure (bar rel) : 5.1	HP Pressure (bar rel) : 12.3
Condensing temp. (°C) : 22.0	Condensing temp. (°C) : 26.8
Compression status : Working	Compression status : Working









Accessible if option subscribed

« Measures » page allows, for each monitored production, to have data access:

- LP and HP,
- Evaporating and condensing temperatures,
- State of operation of the cooling system,
- Outside temperature.

This page gives access to « FIX » pages (if option retained), as well as the « curve » page which, for each monitored production, has three types of curves: instant, historical, ratio cooling capacity in % (if option « energy cumulative » retained).

COURBES

16:04:02



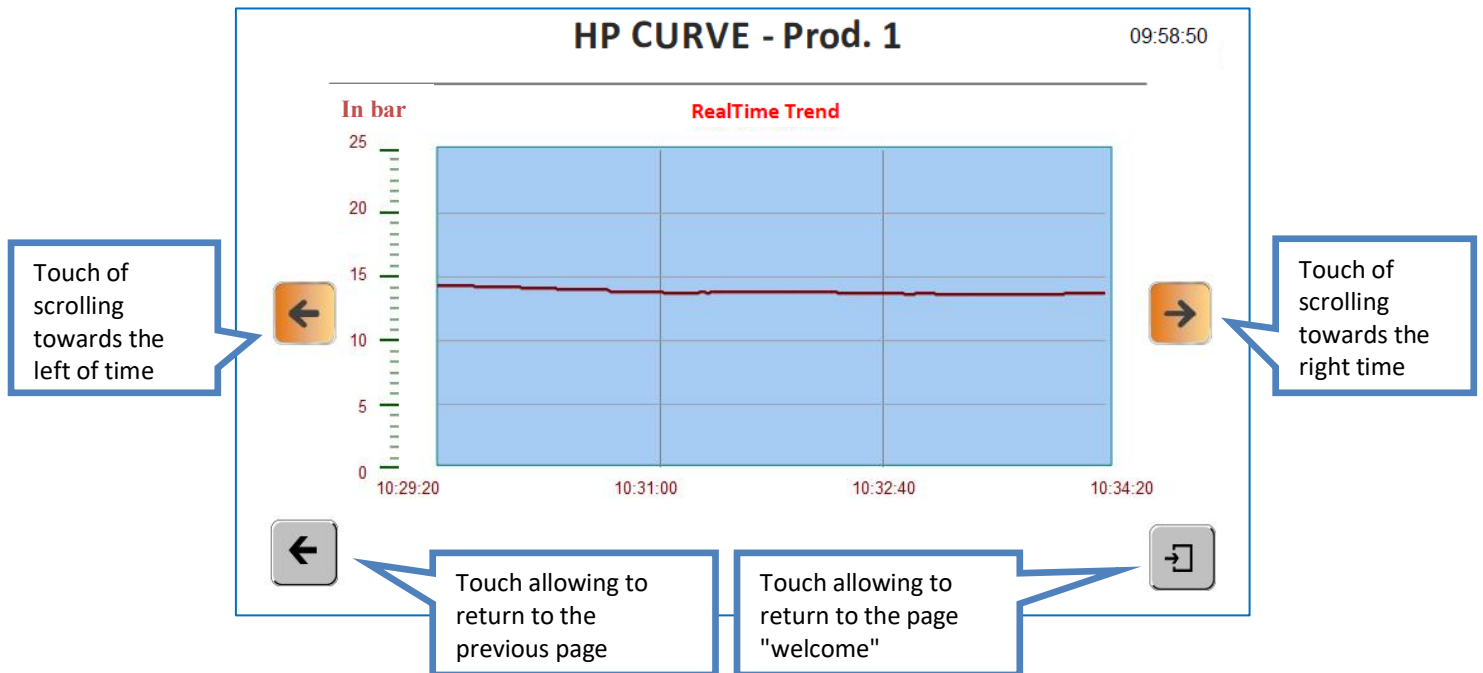
Production 1		Production 2	
Instantaneous	Recordings	Instantaneous	Recordings
			
			



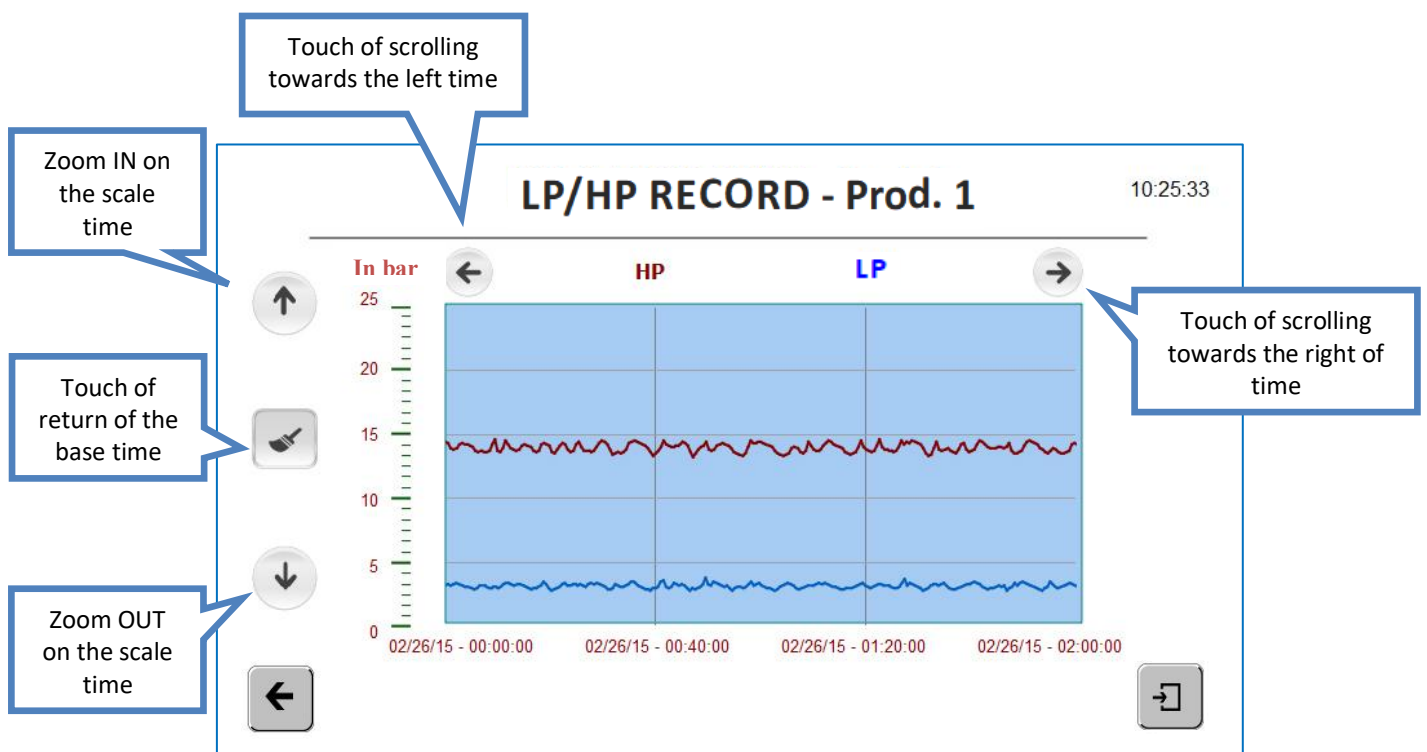

Accessible if option subscribed

N.B.: The outside temperature is only in the configuration form.

Details of « Instantaneous curves » pages.

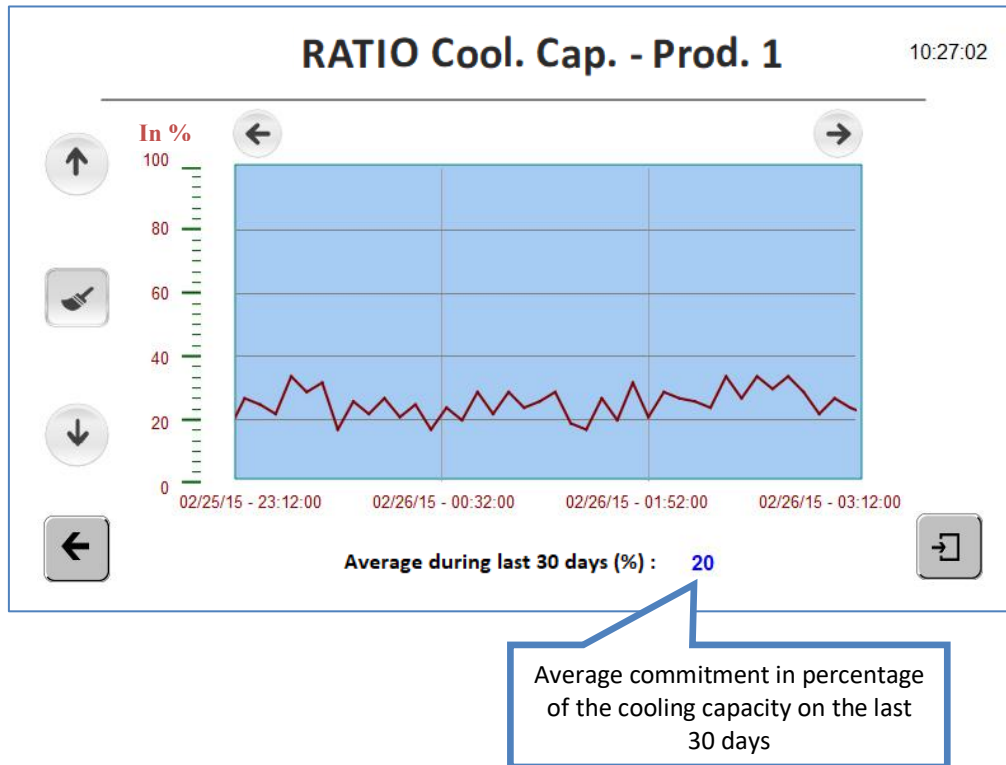


Details of « Recordings curves » pages.



N.B.: The beaches of instantaneous and historical curves are self-organizing depending on the refrigerant used.

Details of « Ratio engaged cooling capacity » pages



This curve gives the commitment as a percentage of the refrigeration capacity to the rated power installed.

This feature is available only if the option « *energy cumulative* » is installed.

c) « Performance » Page.

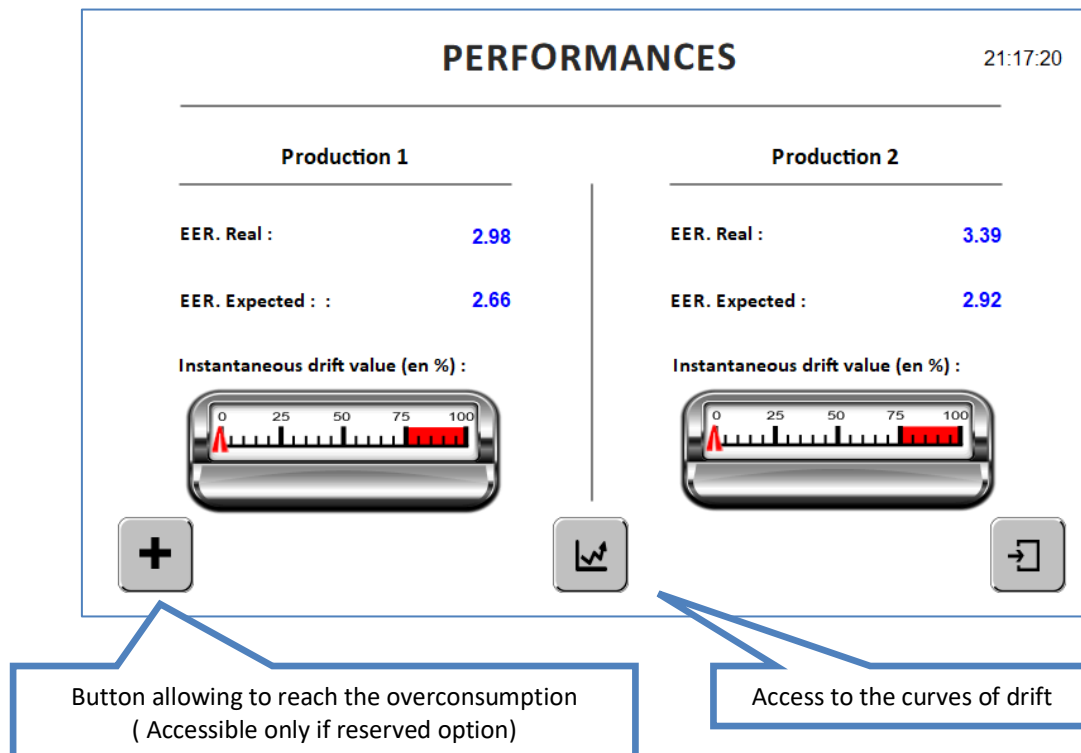
The « Performance » page is called at the touch of button from the « Home » page.

This page shows, in real time, the performance of monitored productions.

Percentage drift indicator gives the value of drifting from the admissible maximum tolerance set.

A position of the needle between 75 and less than 100 indicates a significant drift but without the integration of default action.

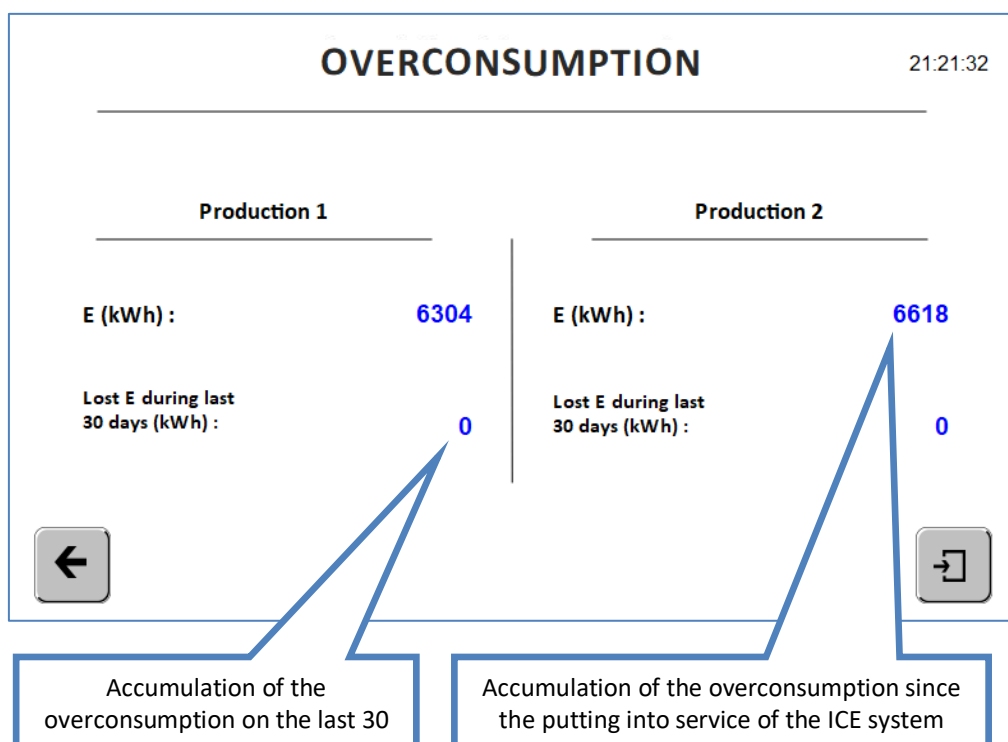
A position of the needle to 100 puts in action the integration of default. It's only at the end of integration that the « energy drift » alarm will be effective.



The button « + » allows you to access the page « Overconsumption ».

d) « Overconsumption » Page.

The « Overconsumption » page is available as an option³, and requires the implementation of supplemental resources as well as the return of working recovery each compressor (see note page 4).



³ « Energy cumulative » option.

e) « Alarm » Page.

ALARM(S) IN PROGRESS 21:27:59

Choice	Description	Date
☐	Alarme PF Max Prod.1	03/10/2018 18:12:27
☐	Alarme PF Max Prod.2	03/10/2018 18:12:27

Select

Legende :
- Alarm triggered.
- Alarm triggered acknowledge.
- Alarm not triggered acknowledge.

Acknowledge
Reset




Button of access to the history of the

Acquittal of the alarms

Reset alarms

To remove an alarm, it should be previously headed the « Configuration » page under password (see page 20) to acknowledge the desired alarm type: **double acknowledge system**.

Then back on the « Alarm(s) in progress » page, for acknowledge (action on « acknowledge ») and then reset (pressing « reset ») the alarm concerned.

Detail of the « Alarms history » page

ALARMS HISTORY 21:34:34

From : 11/01/18 - 21:29:23
To : 11/01/18 - 21:34:23
Duration : 5 Mins
Refreshment

Description	State	Date
-------------	-------	------

Backward
Forward



Legende :
- Triggered Not Acked : Alarm in progress.
- Not Triggered : Alarm inactive.



Drop-down menu of filter of time

Button for the refreshment of action of the filter of time

f) « Configuration » Page.

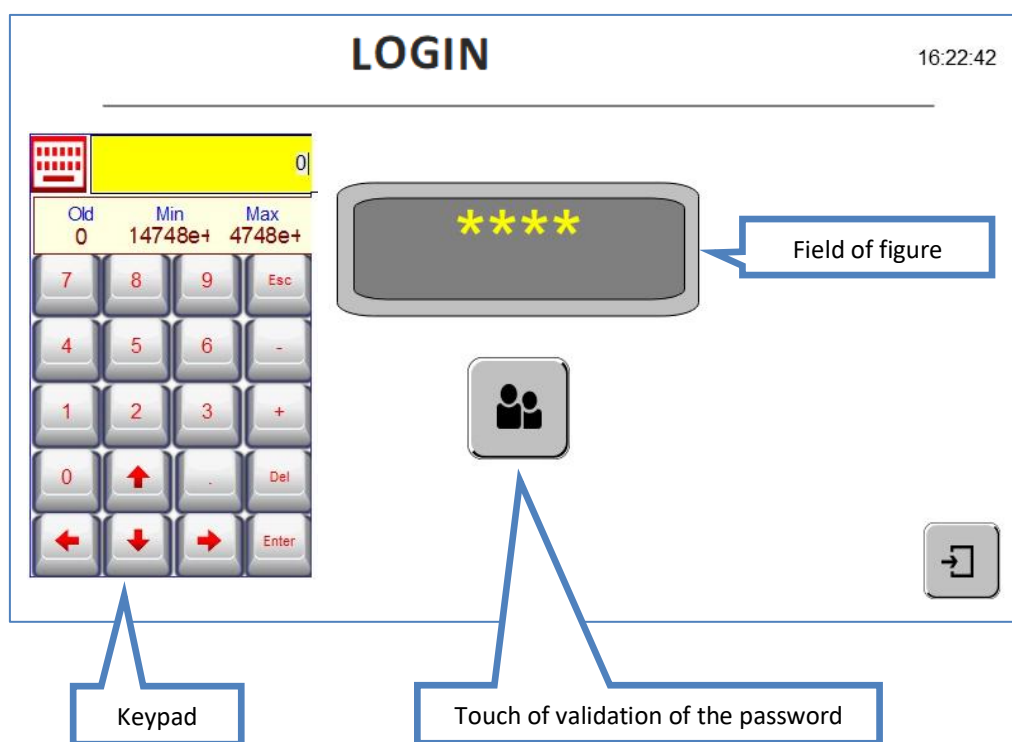
The « Configuration » page is accessed by pressing the ico  on the home page.

Configuration

In the presentation of « Login » page, a touch of the figure with the star field displays the numeric keypad.

→ This is the password (*operator level*): 7895

After having returned the password, press « Enter » (the keypad disappears) and press the touch of validation.



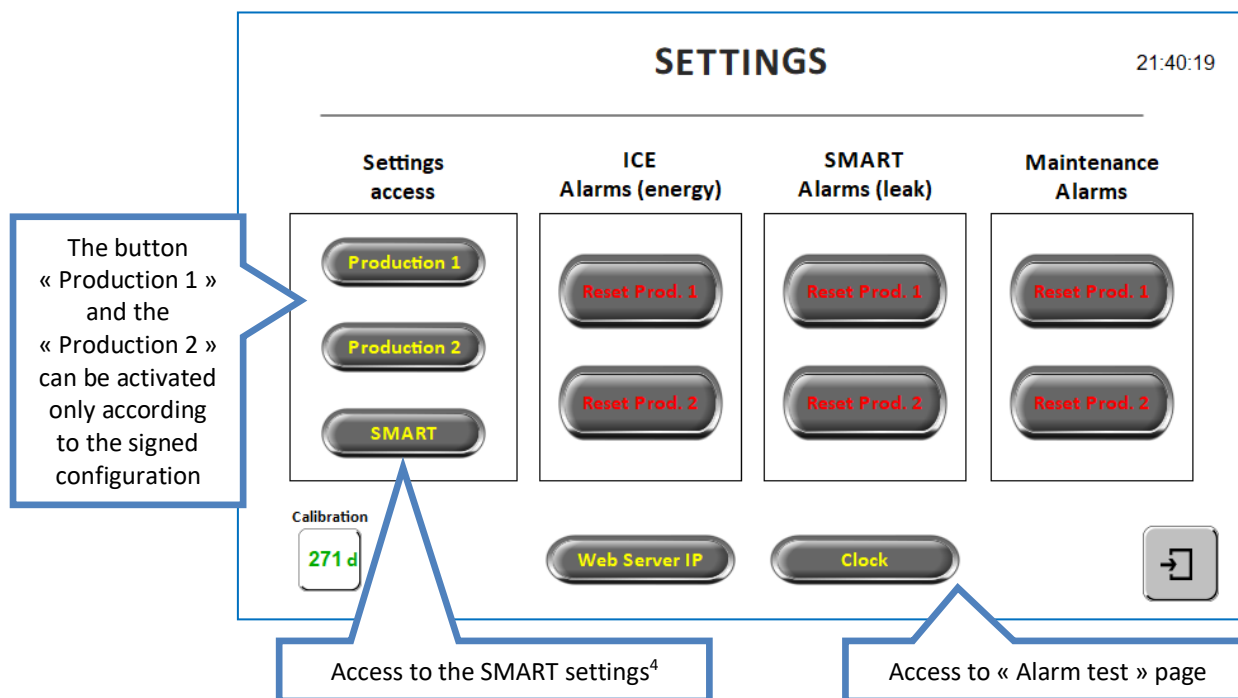
The menu under password is so active and provides access to the page « Settings ».

The password is active for a period of 10 minutes. After this time, the disconnection is done automatically.

It is nevertheless possible to disconnect manually by pressing the button  located on the « Home » page.

Logout

g) « Settings » Page.



The « Settings » page allows access to the following pages:

- ICE settings (production 1 and production 2),
- SMART settings⁴,
- Clock settings,
- IP Web server,
- Alarm test.

The page has several buttons to reset alarms:

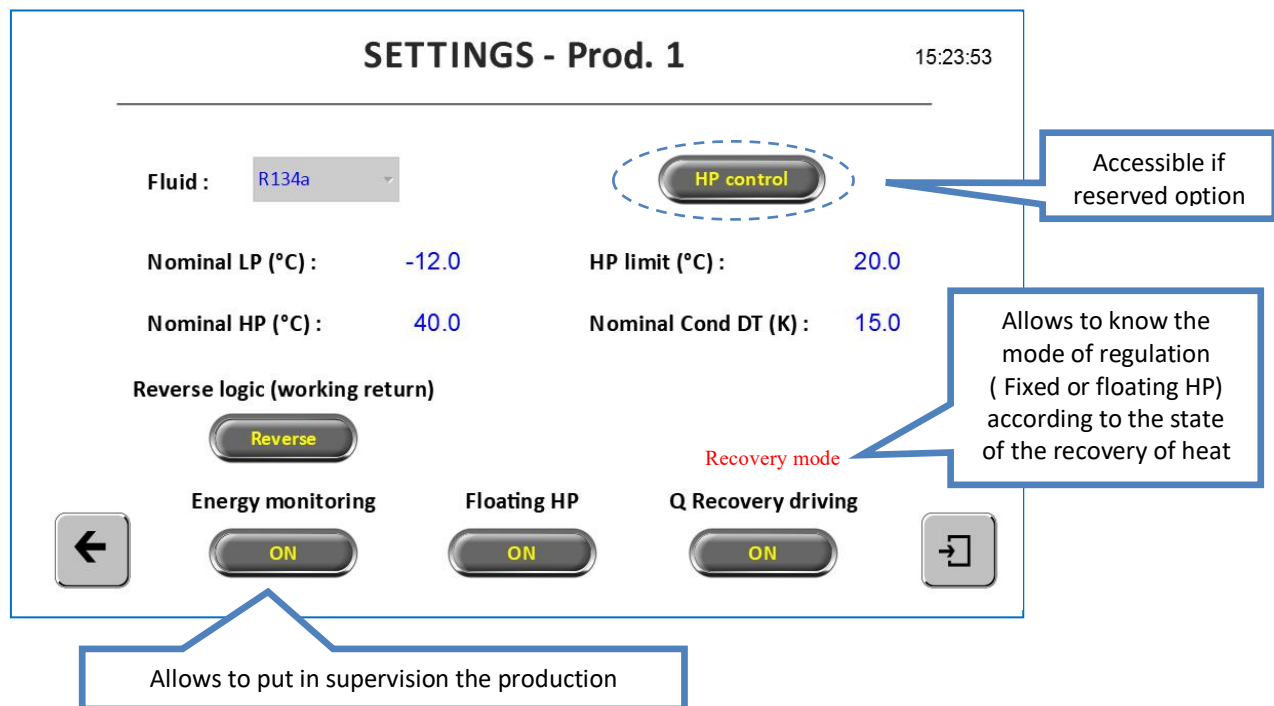
- Acquittals of ICE (energy) alarms,
- Acquittals of SMART alarms (leak),
- Acquittals of Maintenance alarms.

N.B.: About the SMART alarms (leakage), and in accordance with the regulations, a « Reset » can be done only after having made a search of leak by direct method.

Furthermore, when a leak is detected (e.g. in a visual way) before the integration of it by the system SMART, it should be necessarily reset to the system by a « Reset » for the production concerned.

⁴ See corresponding chapter (page 34).

Details of « Production Settings » page



On page display, the current values in the PLC appear.

A touch on a value gives access to the keypad. It should be to enter the new value via the keypad and to push to « Enter » on the keypad to display it.

Action on the « Floating HP » button allows to monitoring production in HP floating mode. The status is displayed on the button.

The status of recovery of heat (active or inactive) is controlled via working returns (XC1 to XC4 connection). This function is *only available* in option 2 (in option 1, gives the state of operation of the compressors).

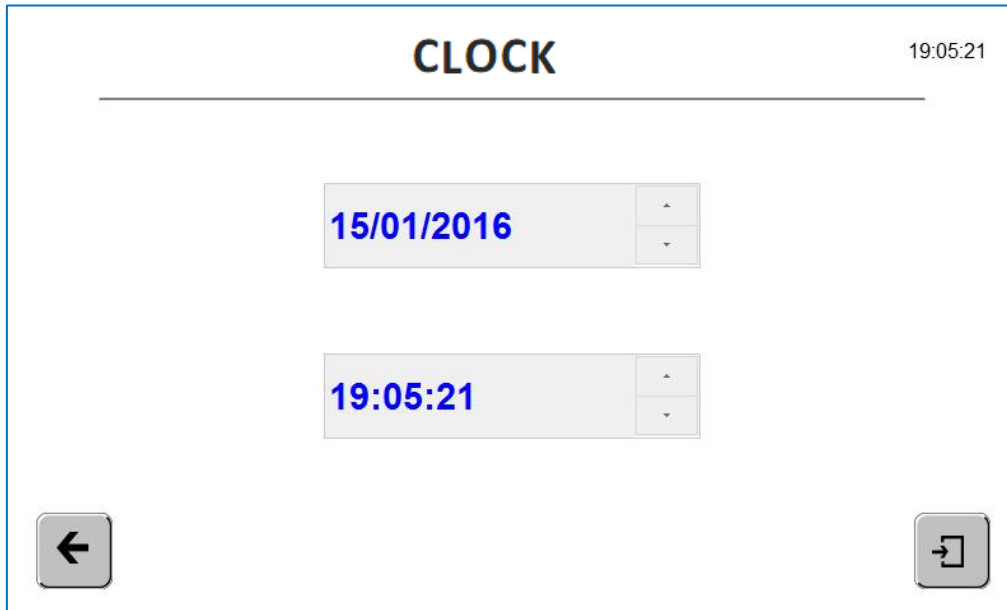
Action on the « Reverse logic » button allows to reverse the logic of the returns of working of compressors (option 1) or the « Recovery » (option 2) mode. The current logic is displayed on the button.

In the mode « Q Recovery driving », the status of the contact is informed in red (display « Floating HP Mode » or « Recovery Mode » depending on the position of the contact).

Action on the button « HP control » (*visible and accessible only if option*) gives access to the regulation parameters HP of the monitored production (see specific documentation on the floating HP regulation).

N.B.: Energy performance depends on the nominal parameters input in the system. **It is up to the installer to be guarantor of those values.**

Details of « Clock settings » page



The « Clock » page allows to set the clock to the screen.

The display of the page, the current values appear in areas of change.

A touch on a value select the value to be changed.

The action on the high and low on arrows allow to display the new value.

The value of the clock also appears at the top right which allows control of the returned values.

Details of « Web server IP settings » page

Web Server IP SETTINGS

22:06:36

Adress IP :

192.168.1.20

Gateway :

192.168.1.1

Subnet mask :

255.255.255.0





The « Web Server IP Settings » page allow to see *(only in case the Web server option is used)* the following set up:

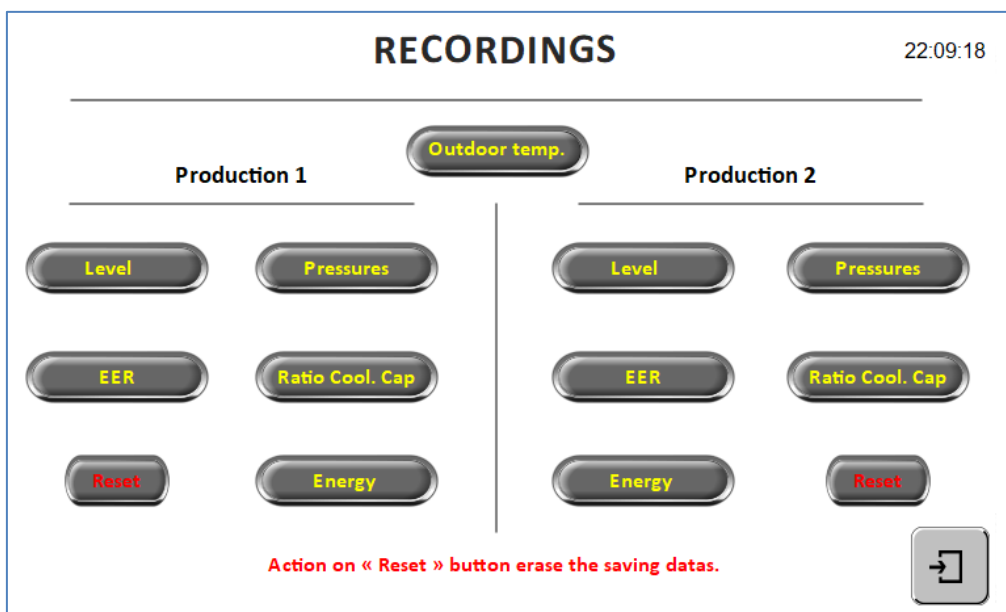
- Internal IP address of the screen,
- Internal IP address of the gateway,
- Subnet mask.

h) « Recordings » Page.

The « Recordings » page allows exporting data.

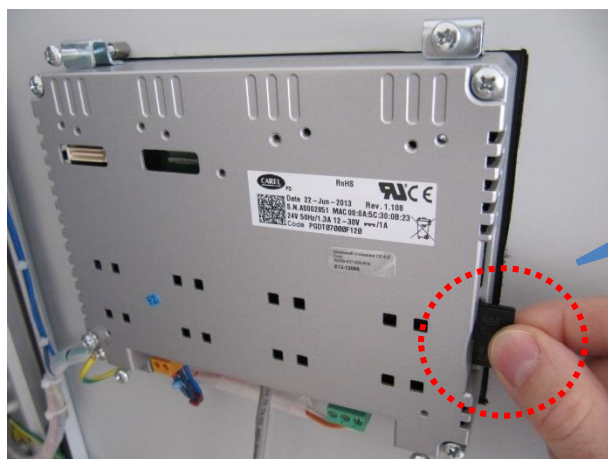
It is accessible via a press on the icon  on the « Home » page

Recordings



Every action on the considered buttons allows to export the data stored in a memory on the SD type card. This card not included, is to insert in the space provided for this purpose at the back of the screen.

The « Reset » button erase the memory of data archived in the memory area of the system.



SD Card

The intervention in an electrical panel requires an adequate authorization.

After each action on a values button, wait few minutes for the transfer of data archived.

VI °- MENU OF THE WEB SERVER (OPTION)

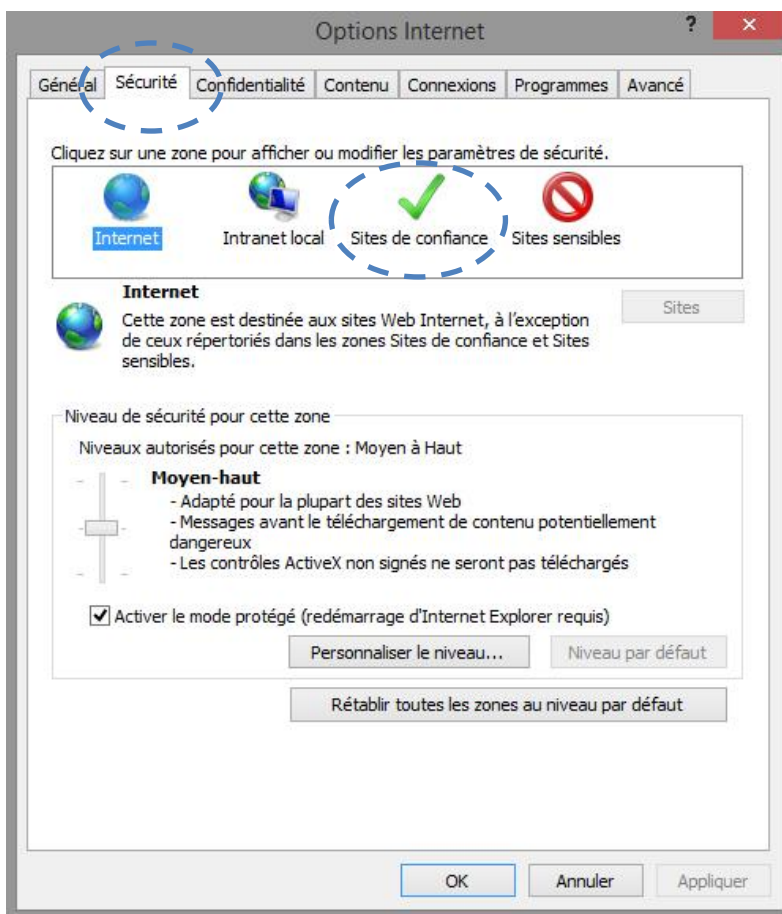
Access to the Web server is accessible *if the option is subscribed* when buying the ICE and/or SMART system. However, this function can be added afterwards.

The touch screen should be connected to **access to the Internet (LiveBox, etc.) with an external address fixed IP**, via a RJ45 cable plugged into the Ethernet port.

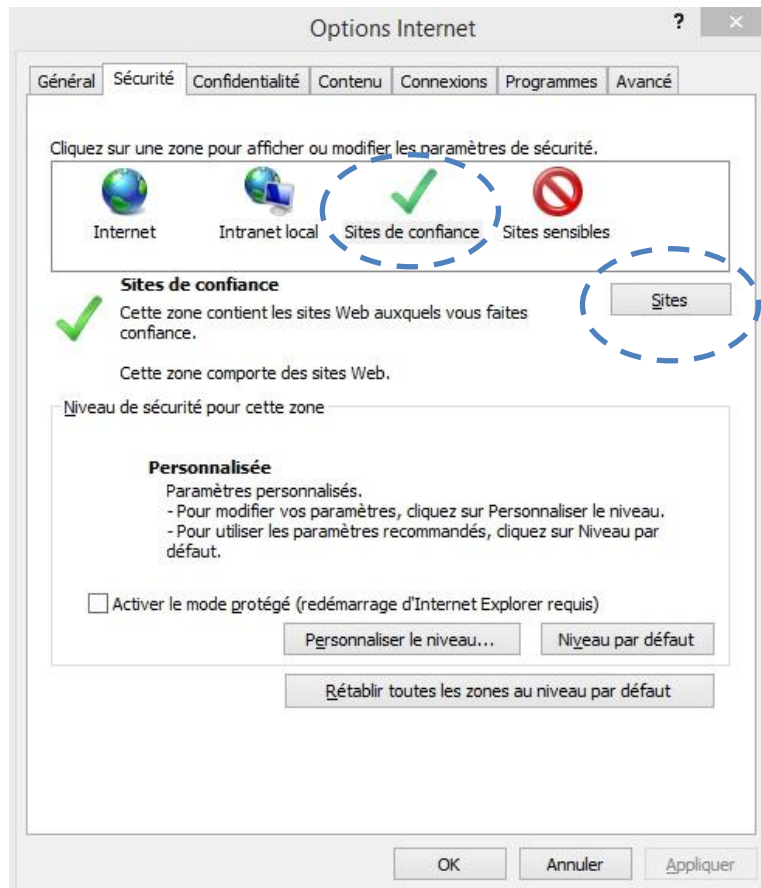
Two possibilities of access to the Web server: by setting your PC (Internet Explorer and possibly your firewall) or by installing on your PC of dedicated software.

a) PC Setup and connection through Internet Explorer

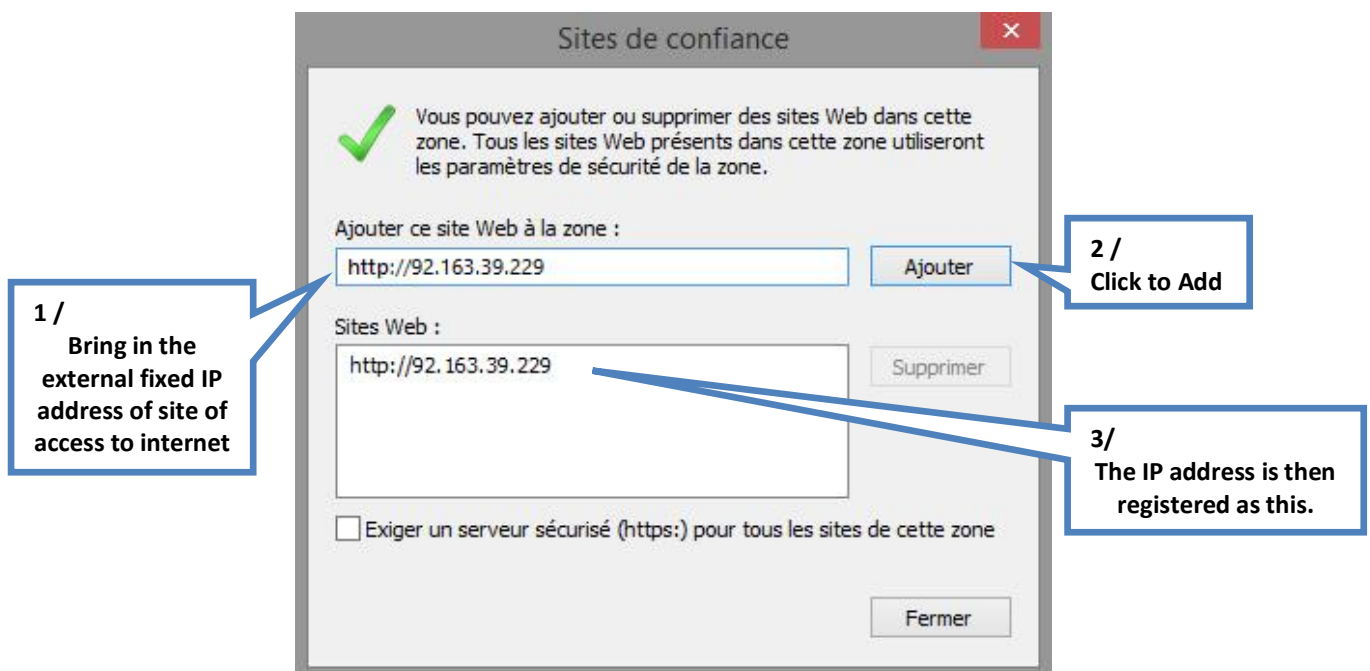
- ➔ Open Internet Explorer
- ➔ In the menu bar, go to « Tools » then click on « Internet options ». A window opens.
- ➔ On the « Security » tab: click on « Trusted Sites ».



Click the « Sites » button.

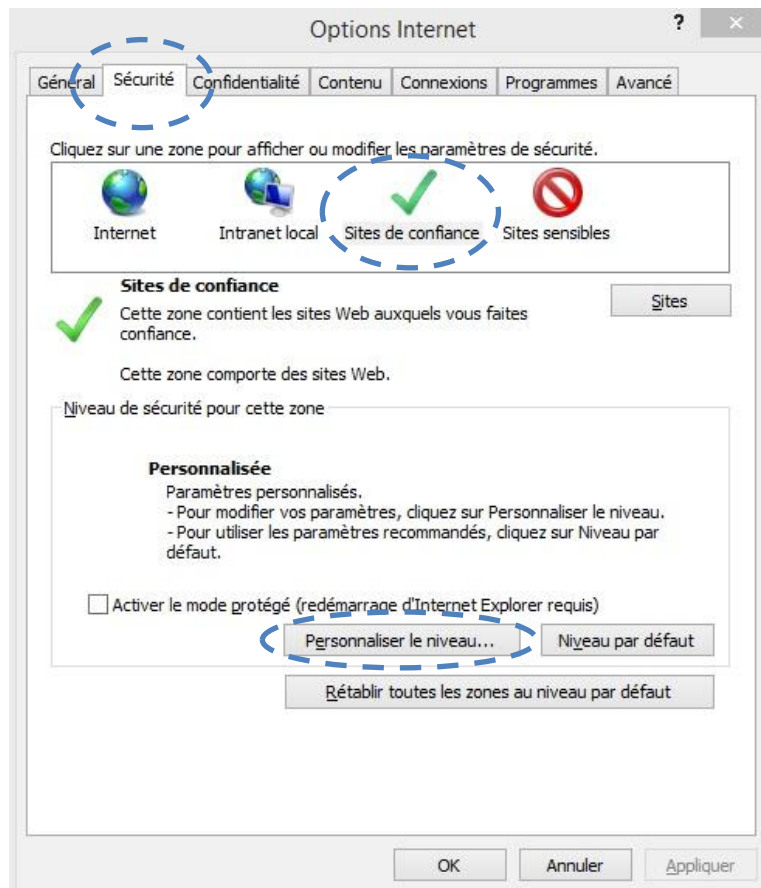


The following window appears on the screen:

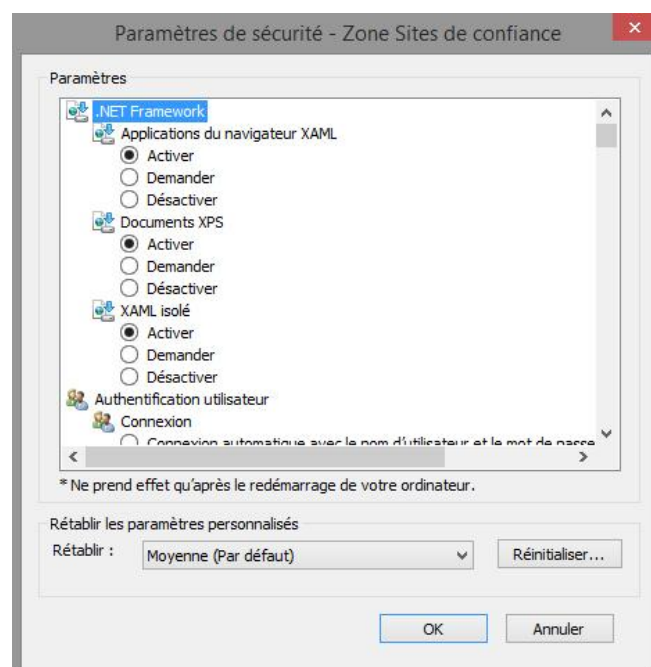


Click on "close".

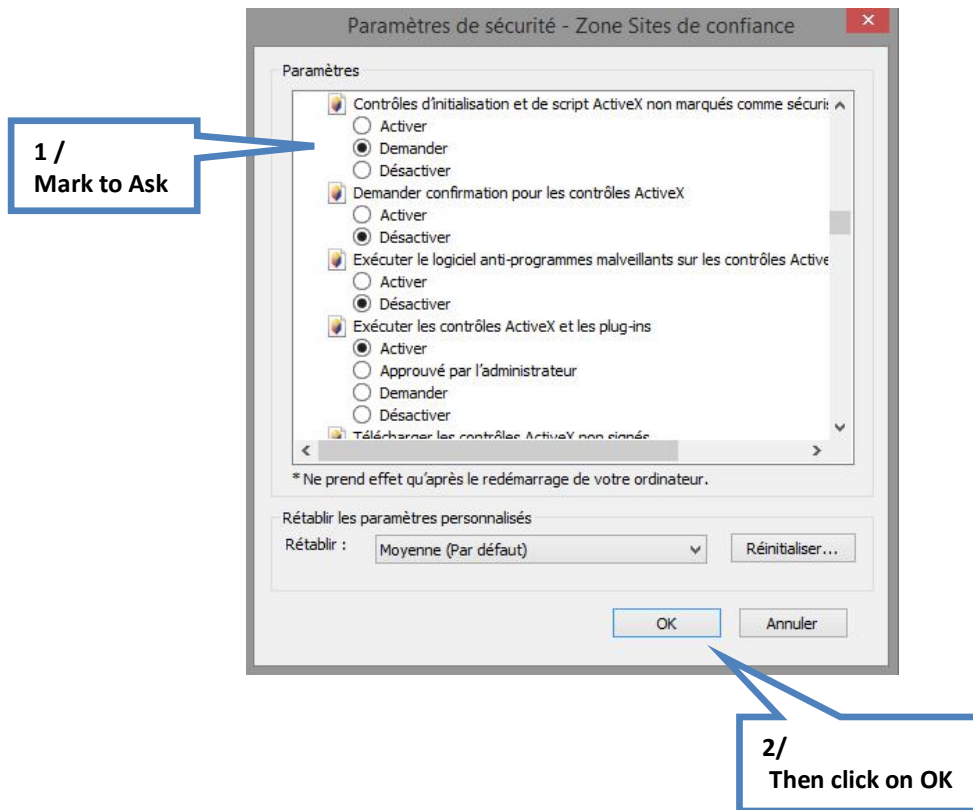
➔ Always in « Internet options », « Security » tab and « Trusted Sites », click on « Custom Level ».



The following window appears on the screen:



Go Down to the setting « Control initialization and script ActiveX not marked as secure for scripting writing ».



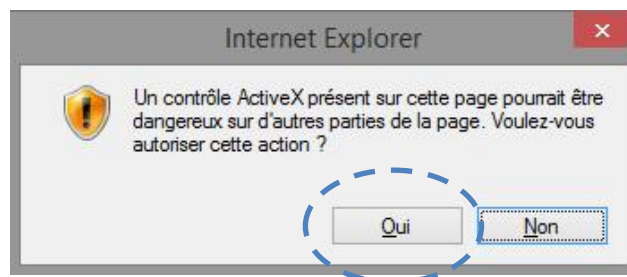
Click « OK » again to close all windows.

Connect to the Web Server

When you connect to the Web Server IP address of the style:

<http://xxx.xxx.xxx.xxx/HMIClientAX.html>

You will observe the appearance of the following message on your Internet Explorer:



Click « Yes ». You will then have access to the Web Server.

N.B.: The first connection can take several seconds (depending on the type of internet connection at your disposal) because your PC load the ActiveX of the Web Server.



b) Installation and use of the dedicated software

INSTALLATION:

The dedicated software (7.75Mo) is available for download via the following link:

http://www.eo2s.fr/Download/EO2S_WebServeur_setup.zip

You will then download a file .ZIP it will unpack into the directory of your choice (example: Desktop).

At this stage, you just more to launch the installation process by running the file « EO2S_WebServeur_setup.exe ».

Follow the installation procedure by answering different questions (for information, the button « Next » gives the default procedure).

Press the button « Finish » for launch program connection.

USE:

To connect, it is necessary to have the address IP of the Web server connected to an access point with a **fixed IP** (<http://xxx.xxx.xxx.xxx>) in base 10/100 Mbps (Gigabit not supported).

When first installed, the software will automatically launch.

The software can also be started via the shortcut located in the office.

The connection is made by filling the fixed IP address of the system to which you want to connect in the address field followed by a support on the launch « Go » button or press « Enter » on your keyboard.





The first connection can be shorter or longer (up to a few minutes) depending on the communication speed of your line and site to access Internet.

N.B.: An additional address happens automatically when pressing the launch button indicating the version of the ICE system.

Stop the communication via a support on the red cross to close the soft.

c) Setting of the touchscreen (on site)

For the touch screen setting, you will need the following data:

- **Internal IP address of the screen**, (e.g. 192.168.1.20).
- **Subnet mask**, (e.g., 255.255.255.0).
- **IP address internal gateway (box)**, (e.g. 192.168.1.1).

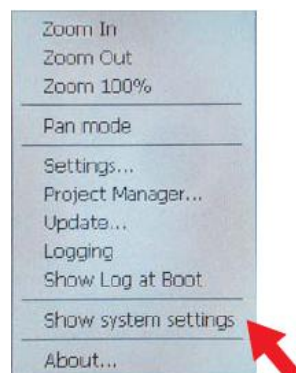
And possibly (if needed):

- **Primary DNS**, (e.g. 32.45.197.258).
- **Secondary DNS**, (e.g. 32.87.197.258).

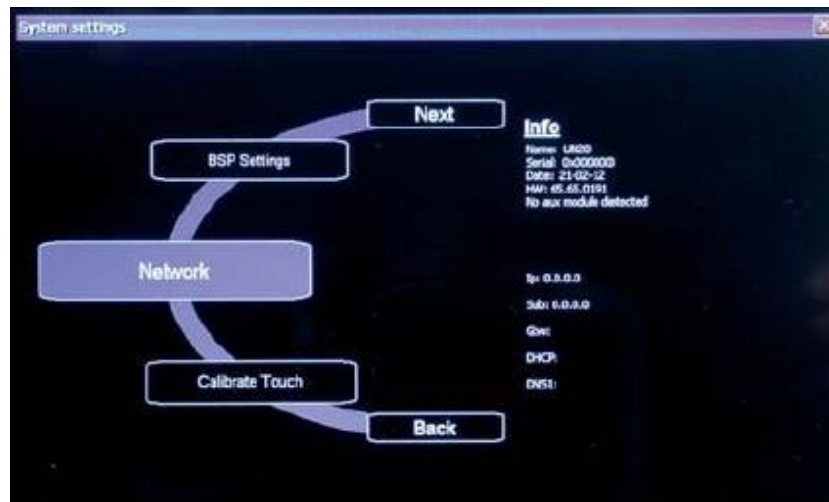
Then press a few seconds on an empty any area of the screen.

A pop-up appears.

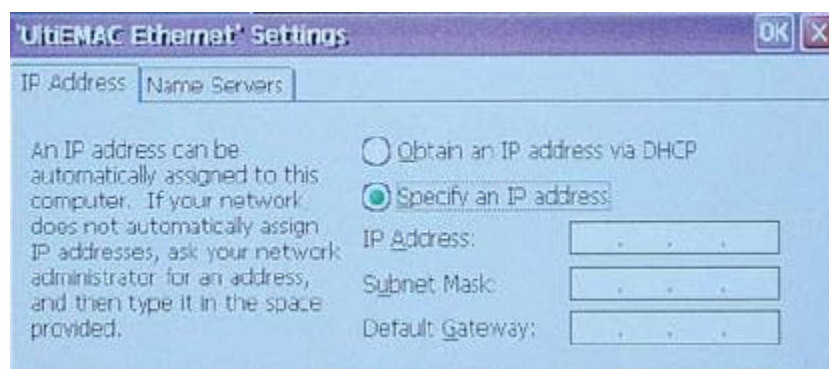
Click on « Show system settings ».



A rotating menu appears on the screen



Choose and click on « Network ». A new window appears allowing you to specify an IP address:



Enter the items collected at the beginning of this chapter and close all windows.

d) Setting to ports in the Internet box

Some ports must be opened for the proper functioning of the Web server of the touch screen:

- http: **port 80.**
- FTP: **port 21.**

N.B.: Opening these ports may be performed via a port forwarding.



VII ° - CALIBRATION OF THE SYSTEM

Depending on the use made of ICE and SMART systems and eventually lift alarms over time, it can appear on the page « Alarm(s) in progress » the term:

« Alarm calibration »

This alarm does not prevent the operation of the ICE system and related options.

However, like any surveillance system, the accuracy of the latter must be regularly monitored.

The user must make **control and calibrate the systems by an agreed representative or by the E.O.2.S. company.**

The frequency of these operations is established directly by the ICE system or regulation (if applicable).

These operations allow to control the functioning of the systems and to integrate the available updates.

S.M.A.R.T SYSTEM

I °- INTRODUCTION

The SMART system (Followed by Adaptive Modelling of Trend Research) is an equipment for helping the leak detection.

The SMART system uses the modelization of the ICE system in the background and can be used in combination with the ICE system.

However, the SMART system can be marketed alone (without the ICE system).

II °- COMPONENTS OF S.M.A.R.T SYSTEM

The SMART system consists of the following:

- Differential sensor⁵ réf. EO2S : FKCM33V5
- IOM module réf. SAÏA : PCD7.L130
- Communication card réf. SAÏA : PCD7.F110S

N.B.: The IOM module allows you to resume the returns of all compressor working of the 2 productions (a maximum of 5 compressors by production⁶).

The elements provided for in monitored production are the following:

- A Ribbon heating (20W/m - 3 m heating - 1 m free) ref. EO2S: RLE-S-20-3
- 2 fittings ¼ "flare - ¼" MPT,
- A flexible ¼ flare,
- A pipe ¼" with two nuts according to fittings,
- Electric cable and bus cable,
- And others accessories required to install the system on each monitored liquid receiver.

⁵ A sensor par production monitored.

⁶ For more compressors per production: **contact us and provide an additional IOM module.**

III °- INSTALLATION

The SMART system can be implemented on the following liquid receiver:

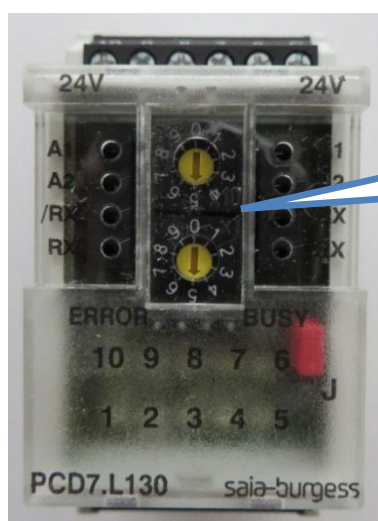
- **Vertical,**
- **Horizontal (with or without tilt).**

Note: Nevertheless, it is up to the professional to contact the EO2S company to check the compatibility of the field of use of the SMART on the target installation system.
EO2S couldn't be held responsible for incompatibility of the system SMART in situ.

a) Electricity

The IOM module and sensor are to be wired according to the electrical scheme enclosed in this manual of use (see option n° 2 - folio 6).

The IOM module is set to the address of the bus n°55, as follows:



Both arrows clock at 5, to parametrize the address bus 55.

If at least a watched production is equipped with 6 compressors or more, a module complementary IOM must be operated and will carry the address bus 56.

Type of cables for connections:

We recommend to used:

- For the field bus:
A cable for data transmission 1 or 2 twisted pairs (section 0,5 mm²) shielded with braid with a low specific capacity (< 100mF/m) and a 120Ω impedance; 100 kHz (example: « Belden » type 8762, section 20AWG, or equivalent).
- For pressure sensors:
A shielded cable HIFLEX CY 2 x 0,5 mm², or equivalent.

b) Connection of the differential pressure sensor

The liquid receiver must imperatively have shut-off valves for the connection of the differential pressure sensor.

The differential pressure sensor connects like a low-level detector:

- Pressure from the bottom of the receiver connects on the **HIGH** of the sensor connection, via a flexible hose.
 - Pressure from the top of the receiver connects on the **LOW** of the sensor connection, via a tube 1/4" surrounded by a heater ribbon.
- This heater ribbon is used to avoid refrigerant condensation in the steam tube to ensure the accuracy of reading.

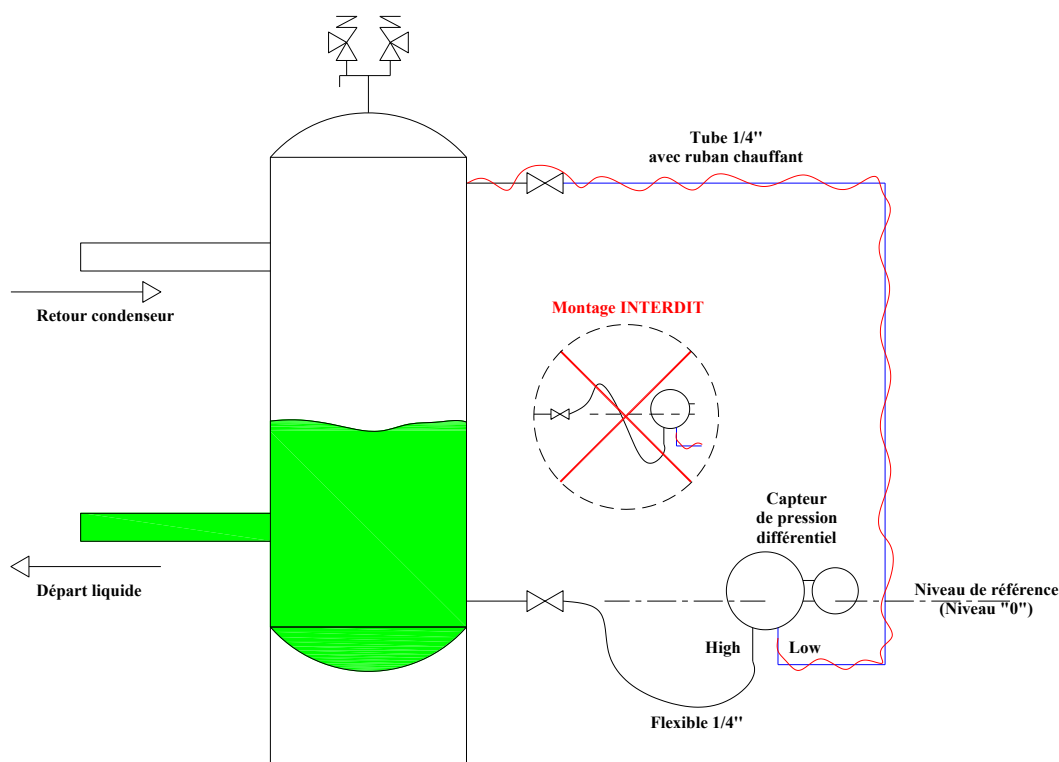
Remarks:

- **Pressure readings made on the line « return condenser » and/or « liquid departure » will result in a malfunction of the SMART system.**
- **Malfunction of the heating tape can generate a sensor fault.**
- **Beware, the heater ribbon is not heating at its his beginning (side connection). Only the heating part must be in contact with the pipe 1/4".**

Principle diagram:

The altimetry of the differential pressure sensor indicates the reference of the measure of the liquid level.

In fact, this reference level (also called level « 0 ») must be located at the level of the low connection to benefit from the full height of the liquid receiver.



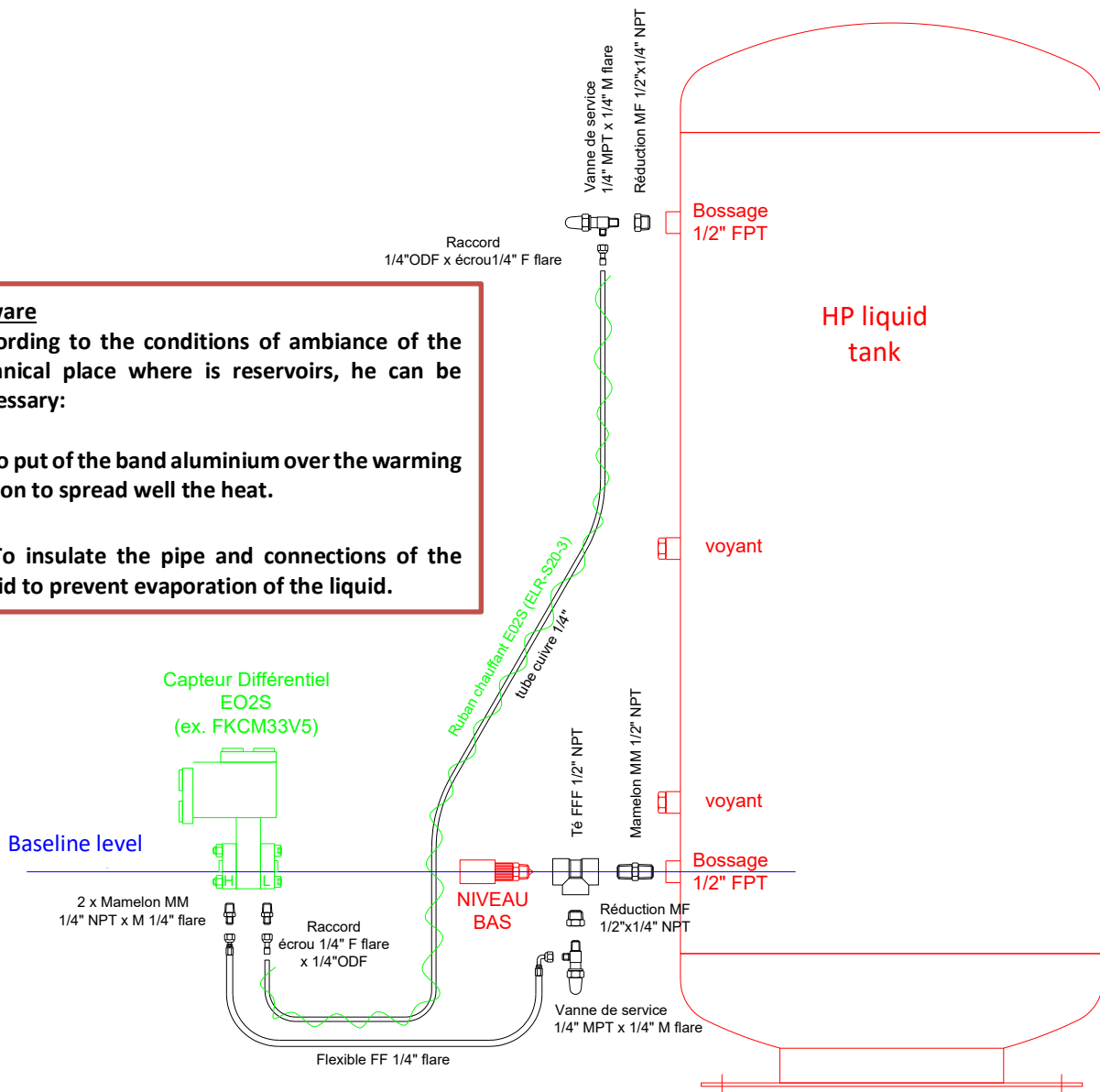
Example on a receiver not equipped with a column of level:

Beware

According to the conditions of ambience of the technical place where is reservoirs, he can be necessary:

1° To put of the band aluminium over the warming ribbon to spread well the heat.

2° To insulate the pipe and connections of the liquid to prevent evaporation of the liquid.



Note: The example above considers the case where the liquid tank already has a low-level controller. In this case, the professional can either keep it or remove it completely. Indeed, the SMART sensor allows to have the alarms of low levels (timeout configurable via the touch screen of the panel).

Example on a receiver equipped with a column of level:

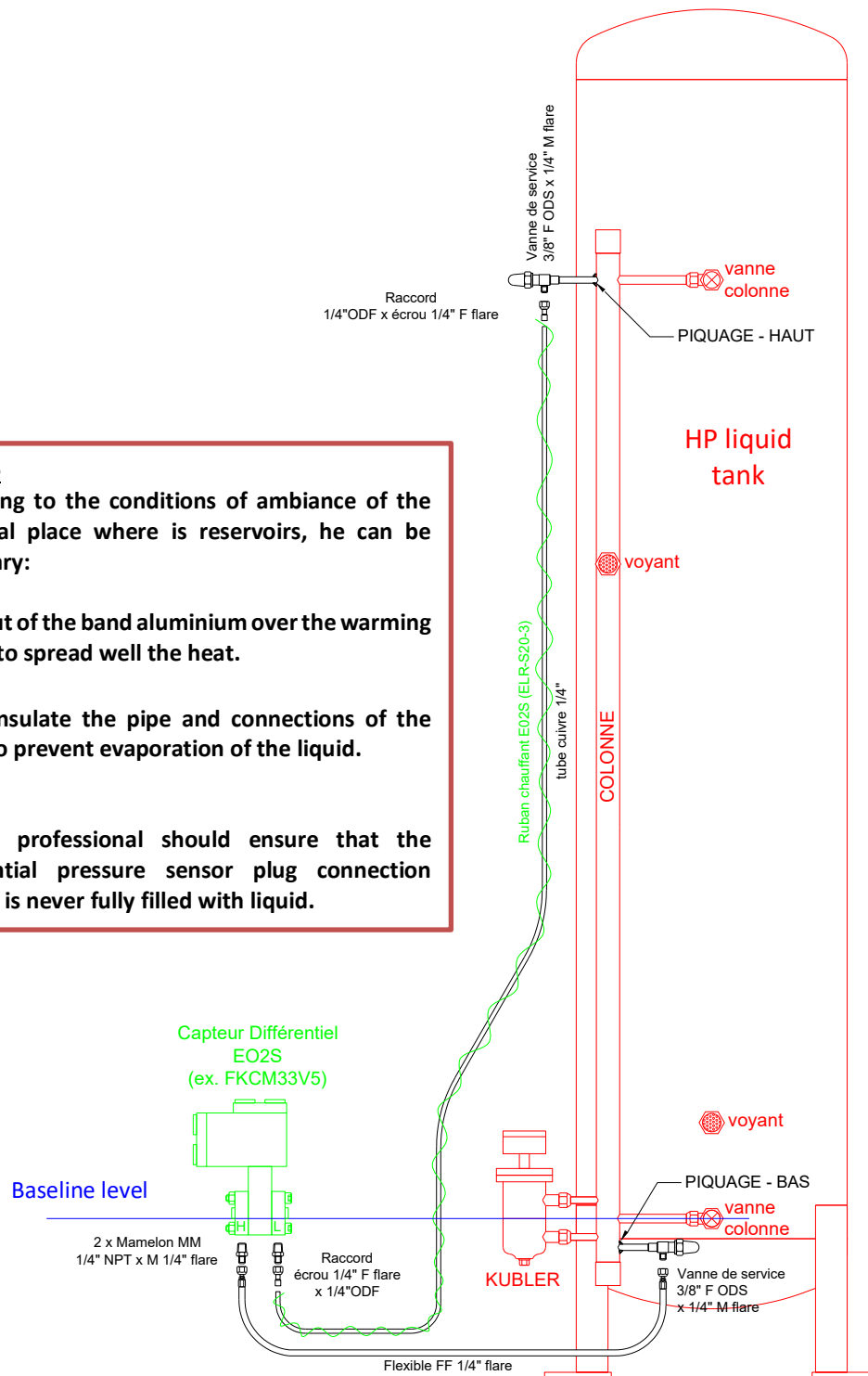
Beware

According to the conditions of ambience of the technical place where is reservoirs, he can be necessary:

1° To put of the band aluminium over the warming ribbon to spread well the heat.

2° To insulate the pipe and connections of the liquid to prevent evaporation of the liquid.

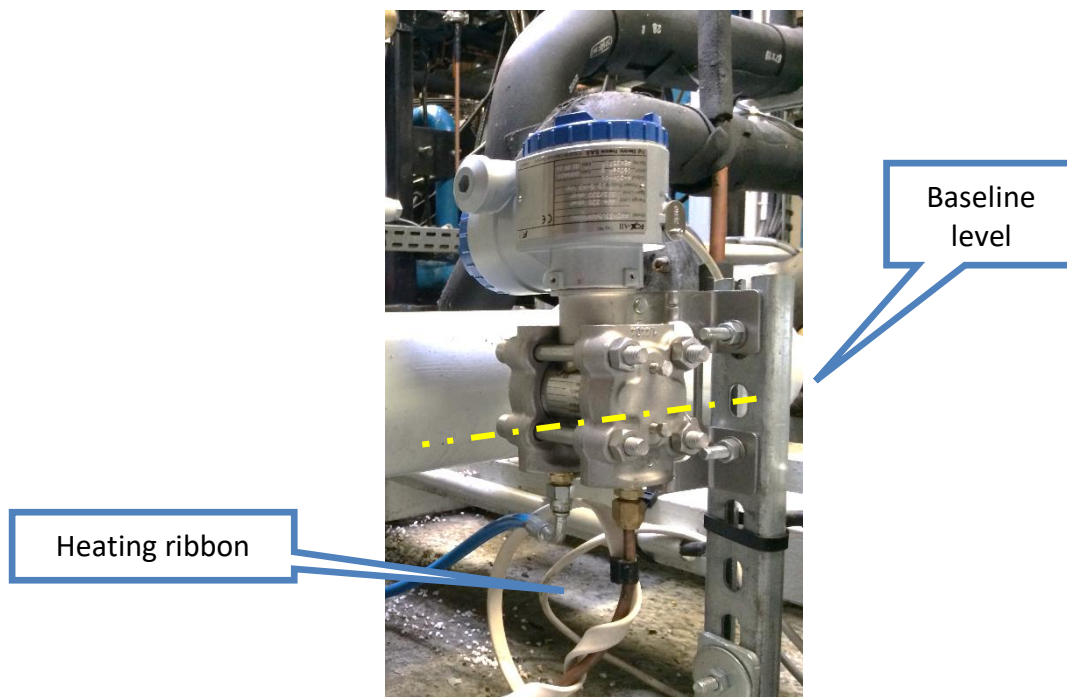
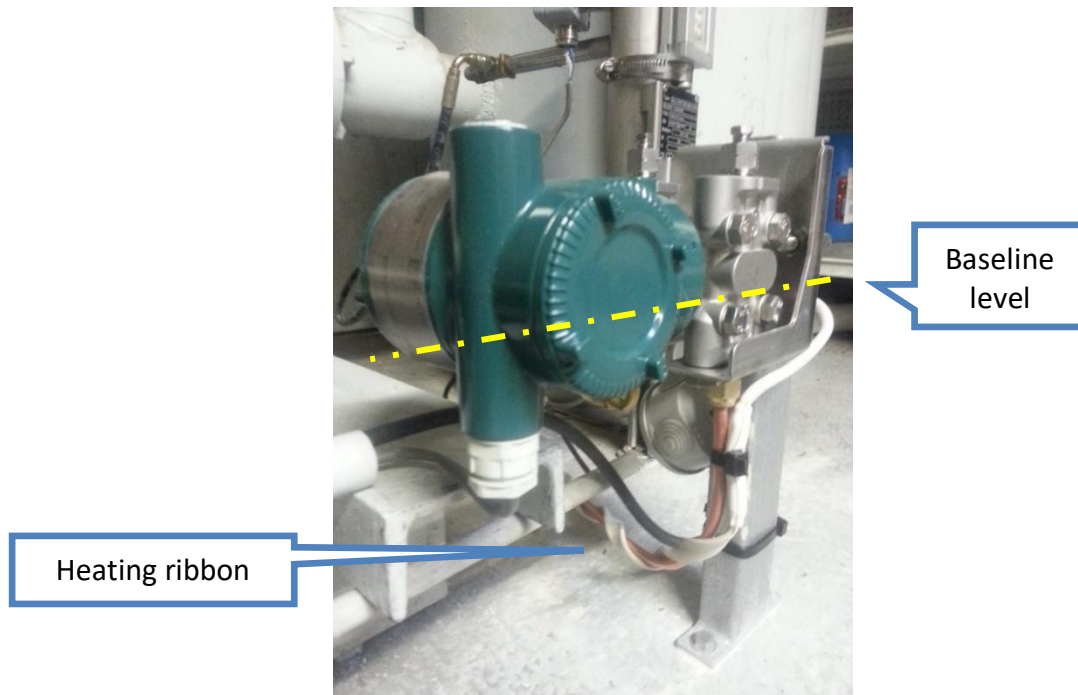
3° The professional should ensure that the differential pressure sensor plug connection column is never fully filled with liquid.



Note: The example above considers the case where the liquid tank already has a low-level controller. In this case, the professional can either keep it or remove it completely. Indeed, the SMART sensor allows to have the alarms of low levels (timeout configurable via the touch screen of the panel).

It is imperative that the low connection is made without against column. In fact, that the hose does not, at any time, rise up beyond the baseline level.

Example with sensor:



N.B.: A rise of the flexible hose will create an against column which would distort the measurement of the differential pressure sensor.

SMART sensors are equipped with bleed screws.

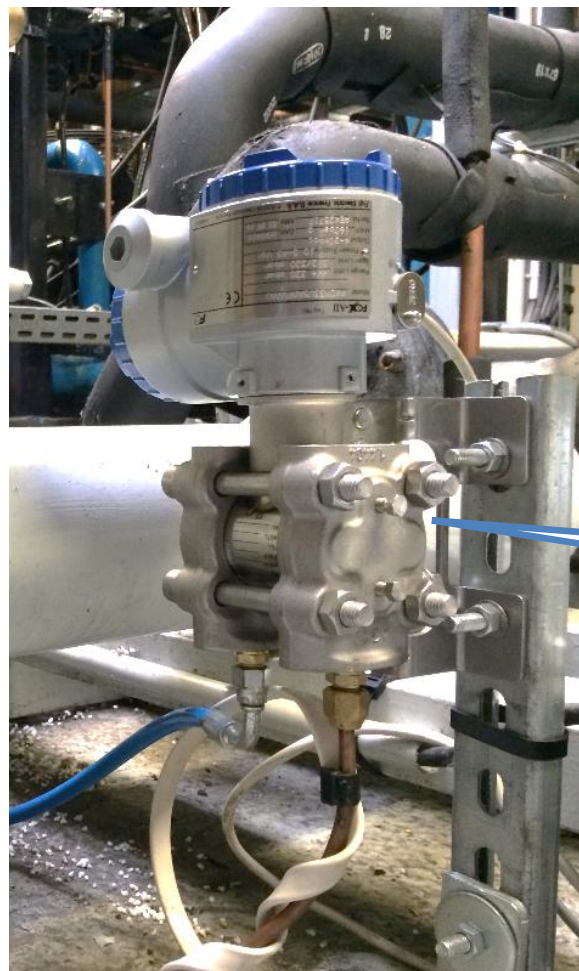
On normal, these screws are not used.

Their usefulness is normally involved in the commissioning of the system or after a maintenance operation.

However, when using screws, tightening of these last must necessarily be carried out as follows:

- Dock the purge screw by hand, without tools, until you get a contact between the screw and flange connection.
- Apply to the key an angular clamping with a recommended value of 1/16 turn order clamping angle (so, between 20 ° and 30 °). The maximum value of the clamping angle is 45 ° (1/8 turn). A 1/4 turn type clamping is an extreme situation that it is strictly forbidden to exceed.

The tightening couple associated with the bleed screw **should not exceed 2 N.m**



Bleed screw

c) Settings

Detection settings are available in the « Settings » page under password (see chapter « Configuration » page) and pressing the « SMART » button.

DETECTION SETTINGS

22:17:27

Production 1

Limit level (cm) : 5

Time out (s) : 3600

Receiver setting : 

Activation





Production 2

Limit level (cm) : 5

Time out (s) : 3600

Receiver setting : 

Activation





Button allowing the user to stop either activating the SMART system in case of intervention of maintenance or other (according to necessity).
The button "activation" can be modified only when the option SMART for the concerned production was subscribed.

!! The deactivation of the system will inhibit all the alarms (including low level)!!

Setting « Level limit » (in cm) allows to set the alarm of low level to the reference level.

The « Timer out » (in seconds) sets the time before the low-level alarm.

The « Receiver settings » button to access the page of settings of the reservoir of the monitored production.

Each « Reset » button is used to cancel the alarm « Presumption of Leak » of the considered production.

N.B.: Low level alarm requires a regular check on the part of the user and/or the company in charge of the maintenance of the supervised installation.
In accordance with regulations, a « Reset » can be done only after having made a search of leak by direct method.

Details of the « Receiver settings » page

RECEIVER SETTINGS
Prod. 1
16:41:40

Vertical Type



Perimeter (cm) : 271

Fluid : R404A

Horizontal Type



Perimeter (cm) :

Length (cm) :

Tare (cm) :

Angle (°) :




RECEIVER SETTINGS
Prod. 1
16:41:40

Vertical Type



Perimeter (cm) :

Fluid : R507A

Horizontal Type



Perimeter (cm) : 100

Length (cm) : 220

Tare (cm) : 7

Angle (°) : 10




The « Receiver settings » page to choose between a vertical or horizontal receiver.

The « Perimeter » (in cm) is the value of **p x diameter** of the liquid receiver.

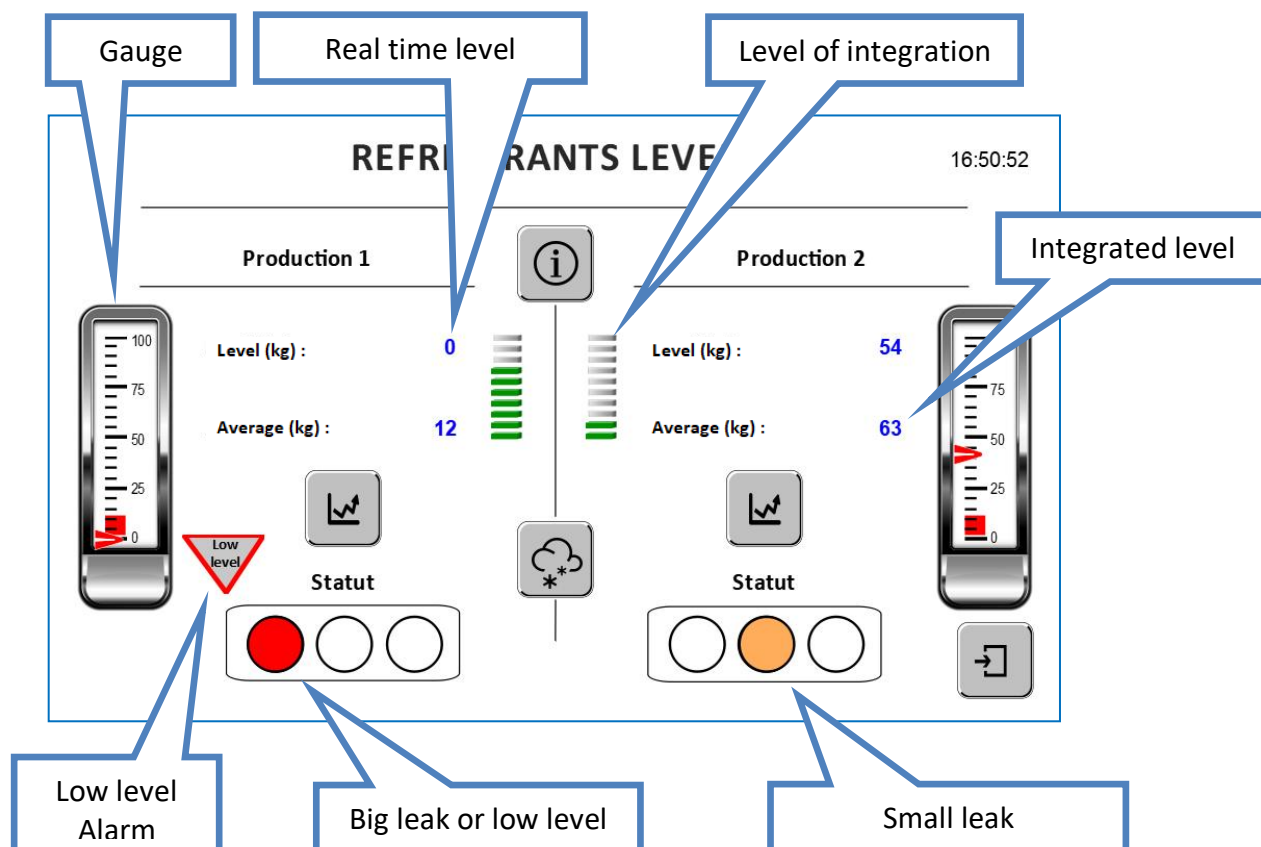
This value is taken by measuring the circumference of the diameter of the liquid reserve (a correction of the thickness of the tank is automatically integrated according to the diameter in the modelization).

The « Length » (in cm) is the length of the receiver (including funds). The characteristics of funds and thicknesses are integrated automatically depending on the diameter of the liquid reservoir.

The « Tare » (in cm) is the distance between the connection of the liquid receiver and the bottom.

The « Angle » data (in °) is the value of the angle of inclination of the receiver.

The leak detection information page is available from the home menu via a tap of the button « Fluid ».



The orange light means a presumption of small leak. In the case of a high leak (or low level), it will be the red light which will light up.

The level of integration indicates the accuracy of the system. It is improving over time based on the number of values. The accuracy of the system is achieved when all the level of integration is completely green.

However, it should be noted that **the system is functional in the first hour** and that integration can only refine the accuracy of the system.

N.B.: At each acquittal a presumption of leakage alarm, the system is reset: level of integration and integrated level will be indicated "0".

The gauge gives, in percentage terms, indicative of the filling of the liquid reservoir.

The buttons  give access to the curves of the gauge fluctuation.

The button  provides access to low level statistics⁷:

16:33:24

INFORMATION

Production 1	Production 2
Number of low passage : 57 (Nb max : 32500)	Number of low passage : 32 (Nb max : 32500)
Number of level low on the last 30 days preceding: 12	Number of level low on the last 30 days preceding: 4
Current timeout before release (s): 985	Current timeout before release (s): 1800







The button  provides access to refrigerant mass statistics lost on a leak presumption⁷:

14:57:45

LOSS OF REFRIGERANTS

Production 1	Production 2
Refrigerant mass lost during the current leak (kg) : 24	Refrigerant mass lost during the current leak (kg) : 15
Refrigerant mass lost during the previous leak (kg) : 12	Refrigerant mass lost during the previous leak (kg) : 57

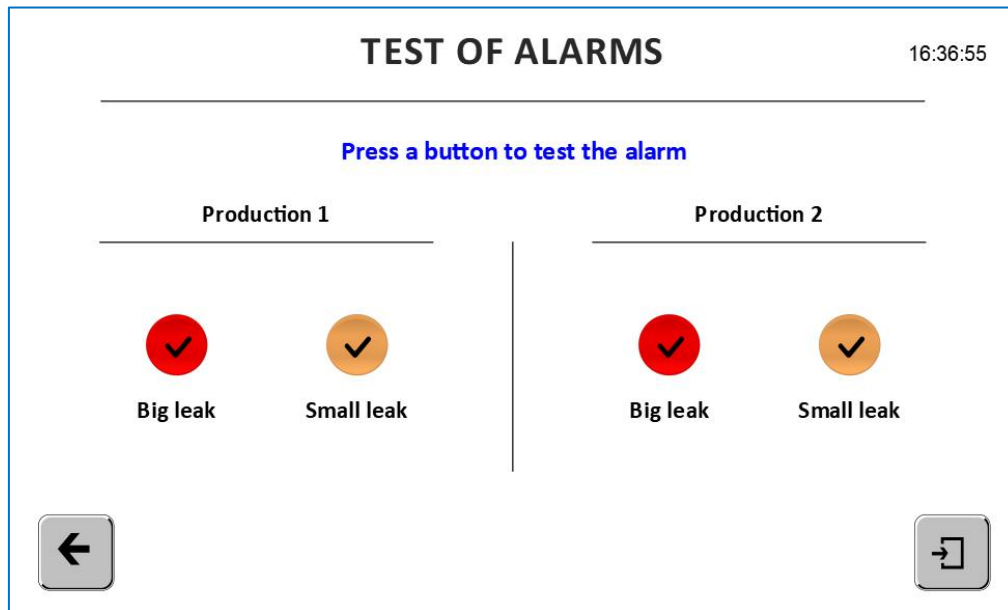
*These data must be confirmed by a control
of the refrigerant load by the professional.*





⁷ Function(s) available only on few versions.

Détails o the « Test of alarms » page



The « Test of alarms » page allows you to perform a false leak presumption leak.

The procedure will be identical to a real alarm:

- Red light in front of the panel,
- Action on alarm relay,
- Sending an email (*if applicable*),
- Identification in the « alarms » menu,
- Etc.

N.B.: Acknowledgement and reset of test alarms is identical to standard procedure.



V ° - SPECIFIC ALARMS

During an alarm of the SMART system, there may be two types of alarms:

- Presumption of leak alarm,
- Presumption of leak + low level alarm.

Characterization of leak is indicated on the touch screen (see orange or red) which allows the technician to know what type of leak searching.

Research of leakage must be carried out according to the usual rules of art in accordance with the regulations in force and the actual.

About the SMART alarms (leakage), and in accordance with the regulations, a « Reset » can be done only after having made a search of leak by direct method.

Furthermore, when a leak is detected (e.g. in a visual way) before the integration of it by the system SMART, it should be necessarily reset to the system by a « Reset » for the production concerned.



i

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EO2S products are constantly evolving.

Free EO2S product documentation is subject to change without notice. Therefore, users should always check for updates to their documentation.