3Sense New Beta Installation and Operation Manual

Technical Assistance

If you encounter a problem with your New Beta controller, review all of your configuration information to verify that your selections are consistent with your application: input; outputs; alarms; limits; etc. If the problem persists after checking the above, you can get technical assistance by dialing +1 (786) 584-7439, Monday thru Friday, 7:00 a.m. to 5:00 p.m. Eastern Standard Time. You can also email your request to info@3sense.tech or use +1 (786) 584-7439 for whatsapp.

Specialized personnel will discuss your application case.

Please have the following information available:

• All Configuration Information

• All User Manuals

Contact Information

To reach New Beta manufacturer, refer to:

Mail: info@3sense.tech

Phone: +1 (786) 584-7439

WhatsApp: +1 (786) 584-7439

Visit: www.3sense.tech

CONTENT:

1. Overview

The modular and IoT focused New Beta device is designed for control, real-time, and remote monitoring of refrigeration systems with high safety and precision requirements, along with cold chain protection in refrigerators, cellars or cold rooms.

In support of your automation needs, it is fitted to sense up to five analog or digital signals (related to the chosen sensors), as well as make consumed electrical power variables measures, and provides the flexibility and capability to control a wide variety of output appliances on five ports (such as compressors, fans, lights, defrost resistors, among others). Besides the controller unit, the system combines a customizable by order Human Machine Interface (HMI), which can be a 4.3" o 5" touchscreen or a LED display front panel, a rechargeable DC supply, to maintain process monitoring after electrical fluid discontinuities, a wireless communication module, and several built-in light and sound alarms. In accordance with the philosophy of the release, all complements referred above can be prescinded, and remote data transmission may be performed by different common wireless technologies.

Adapted to your application, the system is ready and user-friendly after mounting. No external software or equipment is needed to start controlling and presenting your process behavior. Custom configuration and operational limits can be set in situ, only by authorized personnel, since all parameter adjustment is password protected.

1.1. Features

New Beta has been thought to easily monitor, control, present and alarm about the evolution of the process is embedded into. As such, it relies on a series of functionalities, tools and characteristics, set to offer the user the desired comfort.

Among these, it is worth to highlight the base graphic layout offered by the LED display and the Touchscreen: as the first constantly provides information relative to current alarms and real-time readings of interest, and the second, adding to the alluded advantages for the first design, allows any user to quickly recognize, interpret and manipulate each screen, keeping him aware and in control of the state of the system.

Furthermore, the direct link that devices have to the 3Sense Monitoring System®, through the wireless communication module, provides a third

This device is part of 3Sense 4.0 product family

display template accessible from any mobile computing device (computer, tablet, smartphone).
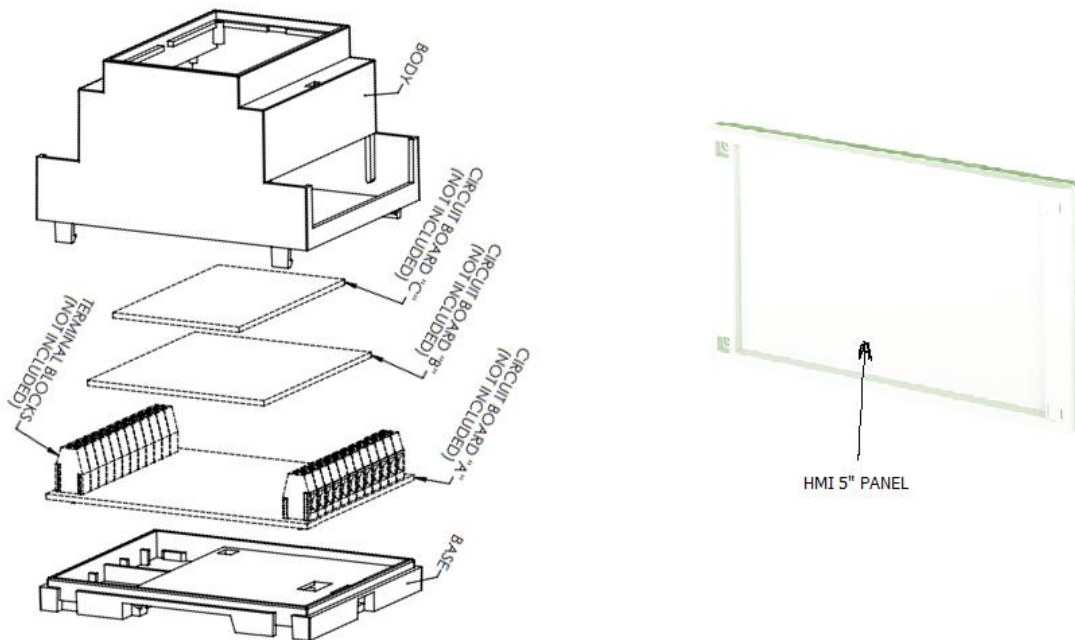
This web access software facilitates to perform remote control and monitoring tasks, keep a graphic record of the variables of interest, indicate their maximum and minimum admissible limits, generate alarm events with visual and sound indications, send external warning messages through e-mail and Text Messages (SMS), and keep a historical record of variables evolution, corrective actions and comments taken when alarms have occurred.

Another noteworthy support, available to increase the operator's dexterity to use the device, constitutes a training box provided by the supplier. It contains multiple input and output emulators, and is prepared for the quick assembly and connection of the different modules of the system.

Relevant features include:

- Enabled to work with Touchscreen or LED HMIs.

- Works without an attached screen.

- Wi-Fi, GPRS, Sigfox, or LoRa remote communication.

- Remote View/Control using PC, Tablet or Smartphone.

- User configurable data logging and historical data viewer on 3Sense Monitoring System®.

- Email, SMS, and web remote notifications.

- Visual and auditory HMI's alarms.

- Stores up to 7 days of data for graphing.

- Besides processes' sensors, New Beta measures its amperage and voltage consumed.

- Configuration parameters protected by access password.

1.2. New Beta Modules

BODY

CIRCUIT BOARD "C" (NOT INCLUDED)

CIRCUIT BOARD "B" (NOT INCLUDED)

CIRCUIT BOARD "A" (NOT INCLUDED)

TERMINAL BLOCKS (NOT INCLUDED)

BASE

HMI 5" PANEL

1. Controller unit: This unit takes care of the multiple input variables and, depending on their magnitudes, decides on control actions. It also serves data for the HMI and communications module.

Set for:
- 3 analog sensors.
- 2 digital inputs.
- 5 control relay outputs.
- With in-built visual / sound alarms.

2. HMI: Presents information related to each sensor to the users, and concedes access to securely alter process operational limits. Touch Screens also permits reviewing historical data.

- LED panel with 7 segments / 4 digits Display, and several LED indicators.
- LCD Display. Resolution 480 X 272. Touch. Full HD, 4.3"

3. Communications module: It is responsible for the wireless transmission of data, in real time, to any platform that allows remote monitoring of the process. WiFi, and connected to 3Sense Monitoring System® by default, could be ordered to correspond to multiple networks and wireless transmission technologies.

This device is part of 3Sense 4.0 product family

May be:

- Board for Wi-Fi (IEEE 802.11) 2.4 GHz. WPA2 encryption.
- Board for GPRS. Quad Band: 850/ 900 /1800 /1900 MHz.
- Board Sigfox Ready, RC2 902 – 905Mhz / RC4 920 -923Mhz, 22dBm ERP.

4. DC Supply: Powers the monitoring and transmission system when AC supply is off.

Includes:

- Battery Charger 6V, 0.2 A.
- 6V Battery.

5. Electrical power variables sensor: Quantifies voltage and amperage consumed by New Beta.

- Current Transformer. 2000:1

1.3. Sample Deployment Note

Throughout this guide, New Beta monitoring and control equipment is set to work upon its base generic application: focused on maintaining temperatures at different points, on a conventional refrigerator, between ranges set by its administrator. For this case, it's also designated the temperature of refrigerator's main chamber as the most relevant control variable.

For these purposes, a compressor, a defrost resistor, a fan and a lamp in the main chamber, and an additional output to an audible alarm are considered as final control elements.

The inspected sensors correspond to NTC thermistors located in the main chamber of the fridge, in its freezer, as well as on its condenser, a switch to indicate the opening of the cooling chamber door, and the ammeter and voltmeter offered in the New Beta assembly.

This application choice has been encouraged by the fact that most common cooling systems involve similar input and output elements.

Further information on the subject, or other applications, may be provided by OEM.

2. Mounting Guidelines

To properly fix all device's cases, please consider the following instructions and suggestions. Plan the power, signal and control wiring before installing the New Beta items. Also consider the cabinet space, hardware dimensions and environmental conditions. Use good wiring practices to minimize problems that may occur due to electrical interference.

> NOTE: Prevent metal fragments and pieces of wire from dropping inside the housing of any New Beta unit. If necessary, place a cover over the components during installation and wiring. Ingress of such fragments and chips may cause a fire hazard, damage or malfunction of the device.

All module boards are held inside a standard DIN rail enclosure. Only the HMI display is over an independent frame, made to be placed at the process' front control panel. Every unit is already programmed before delivery with all its functionalities, so it's ready to mount.

2.1. Environmental Considerations

Both controller case and HMI must be used indoors only. The units should not be installed where fast temperature variations may occur, as this can cause condensation of water vapor on the device, neither should be exposed to excessive dust, dirt, salt, direct sunlight or shock and vibration.

Do not operate the controller in an area where chemicals or flammable gases are present. Environmental limits set for its operation are as follow:

- 32°F (0°C) < Room Temperature < 122°F (50°C),
- Relative Humidity (RH) <80% non-condensable.

> NOTE: Locate New Beta and all related control components away from AC power/motor wiring and sources of direct heat output such as transformers, heaters or large capacity resistors.

2.2. Dimensions
2.2.1. Main Unit

The main unit housing is a standard DIN Rail Mount Multi-Board Box. Its dimensions are indicated by the following schemes:
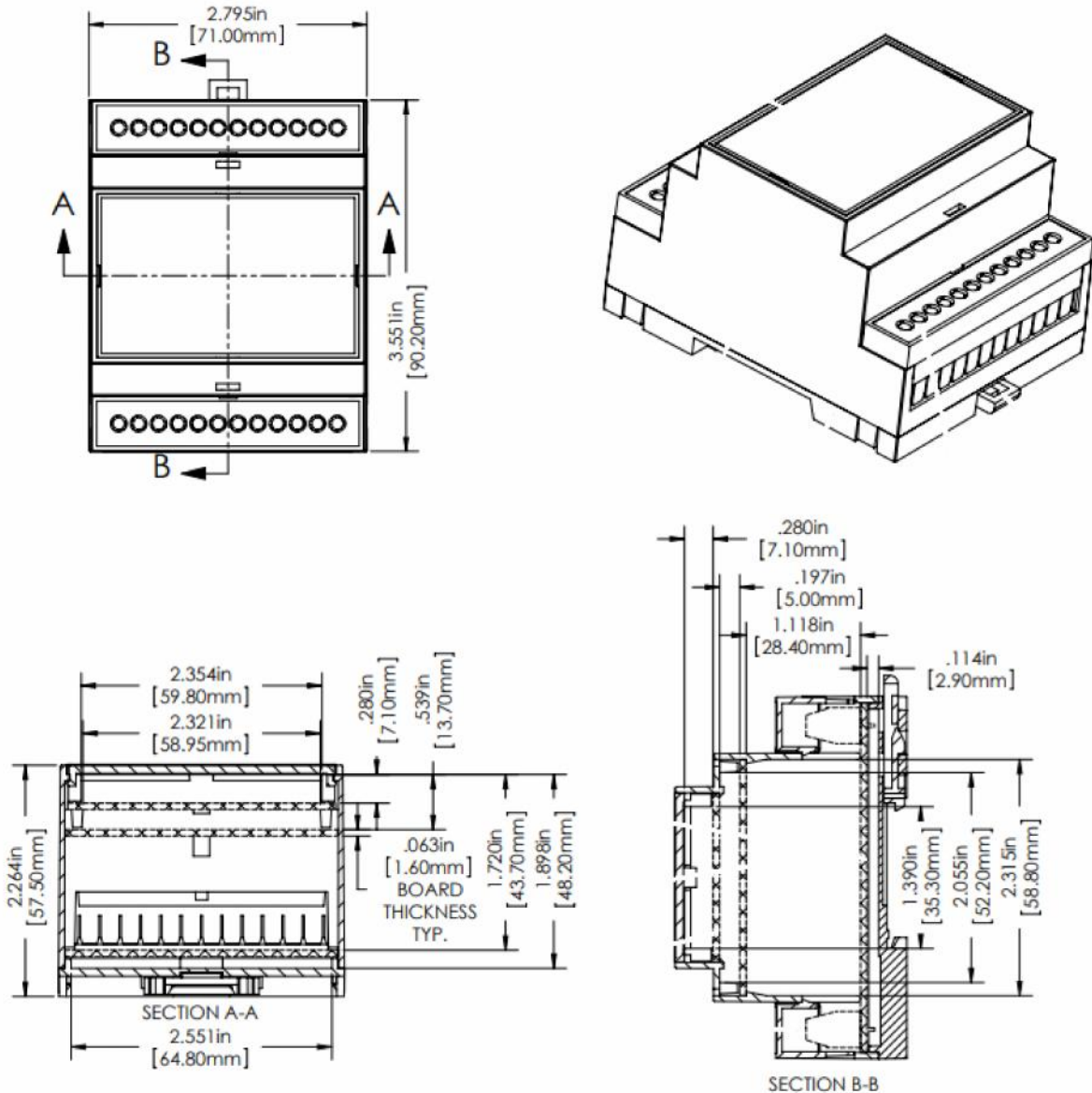
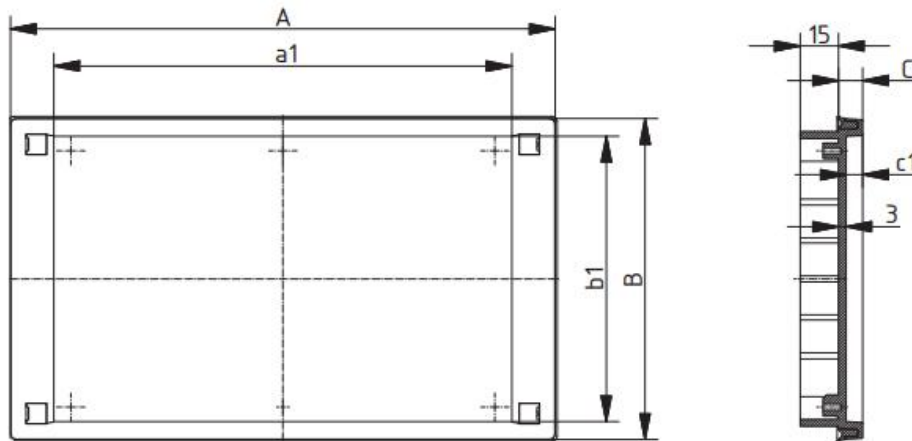Material: PC/ABS (UL94V-0). For further information concerning this enclosure, visit: //goo.gl/MPVsww

Weight: 80g, without accessories.

2.2.2. HMI Panel

The HMI frame is an ABS board. Its dimensions are indicated by the following schemes:

Material: ABS (IP54). A=166mm B=106mm C=9,5mm a1=131,3mm b1=92,3 c1=6,5. For further information concerning this enclosure, visit: //goo.gl/hex7Y4

Weight: 100g, without accessories.

2.3. Fixing Indications

2.3.1. Main Unit

The controller device is delivered ready to be coupled to a DIN rail. DIN clips may be considered to secure the device to the DIN rail.

It is recommended to mount before wiring and after attaching all enclosed modules (communications module, DC supply, electrical power variables sensor), to hook the assembly as a single block.

2.3.2. HMI Frame

To screw the HMI carcass to the process' front control and monitoring panel, use the following instructions:

1. Locate, drill, and tap the mounting holes (M4), using the dimensions shown on section 2.2.2.

2. Ensure that the display is disconnected from controller and electrical power.

3. Secure the module to the panel, using a Pan Head M4 screw with spring and flat washer. Do not use a flat head screw.

3. Electrical Installation Foreword

Follow the corresponding safety codes to connect New Beta to peripheral equipment. Request specialized technical assistance if you are not aware of these standards. Proper grounding and wiring of all electrical equipment helps to assure the optimum operation of your system and to provide additional electrical noise protection for your application and the New Beta device.

Consider implementing safeguards independent to New Beta when designing the wiring and grounding plans for your application. This prevents any malfunction on the process to be managed due to unexpected operational failures, to which any electronic system is susceptible.

> NOTE: This section presents recommended installation practices and procedures. Since no two applications are identical, these recommendations should be considered as guidelines. The system designer should be aware that devices in control systems could fail and thereby create an unsafe condition.
>
> Remember not to wire or ground any device powered by energy,

or linked to other energized appliance, to avoid risk of electric shock, fire hazard or damage to New Beta.

Failure to comply with these guidelines could cause damage or unpredictable operation which could result in death or severe personal injury and/or property damage.

3.1. Power Requirements

The New Beta system is protected against power interruptions through its DC power module, among other hardware and firmware precautions, which takes care of the actions of monitoring, control and storage of data.

If the battery is not used, the operations listed above would be compromised after electrical interruptions. DC power can provide power for up to 48 hours.

The system supports:

• Rated input voltage: 110 / 220 VAC, 50/60 Hz.

• Input voltage range: 90 to 250 VAC, 50/60 Hz.

• Maximum current to common external machines:

Compressor or defrost relays: 12A / 120 VAC or 220 VAC, 50/60 Hz.

Fan and other relays: 3A / 120 VAC or 220 VAC, 50/60 Hz.

3.2. Supply Connection
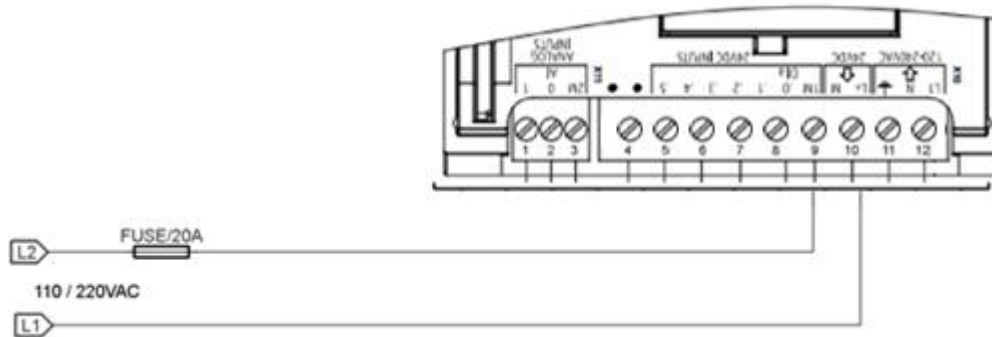
Main Unit's board must be power supplied by an AC network, as indicated before.

To connect the lines corresponding to L1 and L2:

1. Strip about ¼" of insulation off the end of each wire.

2. Locate the screw terminals nominated as AC1, and CM1/CM2/CM3; L1 should be connected to AC1, and L2 to CM1, CM2, or CM3. It is recommended to link L2 to CM1, CM2, and CM3.

3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.

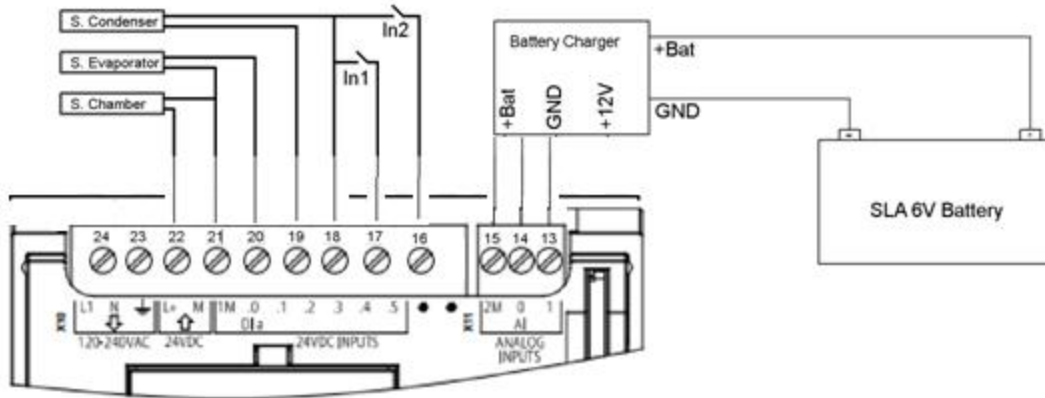### 3.3. Modules Wiring and Binding

3.3.1. HMI Connection

Link the Touchscreen and the Communications Module board thru their RJ45 ports. These, are shown in the following image:

3.4. Peripheral Wiring
3.4.1. Input Appliance and Battery Charger

A schematic of Inputs connection profile for the New Beta is shown below:

To connect the Analog Inputs:

1. Strip about ¼" of insulation off the end of each wire to connect.

2. Locate the terminal screws nominated as T1/T2/T3, and GN1/GN2. One end of the passive sensor should be connected to T1, T2, or T3; and the remaining end should be connected to GN1, or GN2. Is not necessary to link GN1 and GN2.

3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.
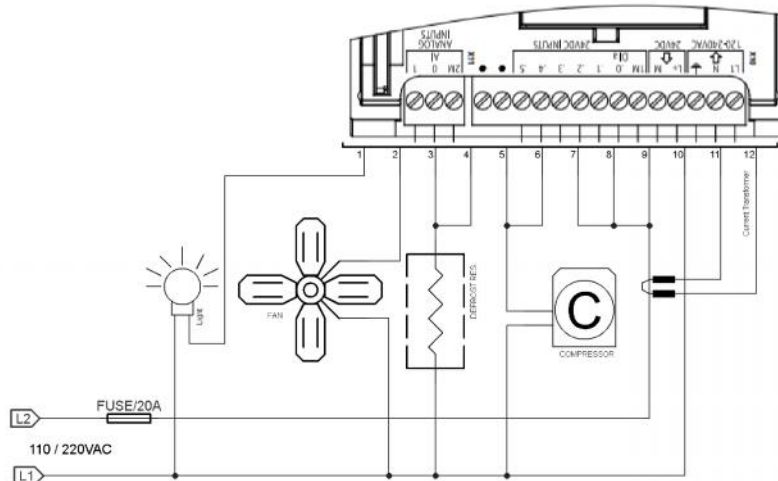

To connect the Digital Inputs:

1. Strip about ¼" of insulation off the end of each wire to connect.

2. Locate the terminal screws nominated as IN1/IN2, and GN1/GN2. One end of the passive switch should be connected to IN1, or IN2; and the remaining end should be connected to GN1, or GN2. Is not necessary to link GN1 and GN2.

3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.

To connect Battery Charger:

1. Strip about ¼″ of insulation off the end of each wire to connect.

2. Locate the terminal screws nominated as BAT+, GN3, and 12V. The positive output end of battery charger terminals, not connected to the battery itself, should be directly linked to BAT+ terminal; the battery charger output ground, not connected to the battery itself, should be linked to GN3; and the remaining input end for 12V, should be connected to 12V terminal.

3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.

3.4.2. Output Appliance and Consumed Electrical Current Sensor

A schematic of Outputs connection profile for the New Beta is shown below:

To connect refrigerator's compressor:

1. Strip about ¼″ of insulation off the end of each wire to connect.

2. Locate the terminal screws nominated as C01, and C02. One end of compressor terminals should be directly linked to AC L1 (or AC1 screw terminal); and the remaining end should be connected to C01, and C02.

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3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.

To connect refrigerator's fan:

1. Strip about ¼" of insulation off the end of each wire to connect.

2. Locate the terminal screw nominated as FAN. One end of fan terminals should be directly linked to AC L1 (or AC1 screw terminal); and the remaining end should be connected to FAN.

3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.

To connect defrost appliance:

1. Strip about ¼" of insulation off the end of each wire to connect.

2. Locate the terminal screws nominated as RE1, and RE2. One end of compressor terminals should be directly linked to AC L1 (or AC1 screw terminal); and the remaining end should be connected to RE1, and RE2.

3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.

To connect main chamber's light:

1. Strip about ¼" of insulation off the end of each wire to connect.

2. Locate the terminal screw nominated as LGH. One end of compressor terminals should be directly linked to AC L1 (or AC1 screw terminal); and the remaining end should be connected to LGH.

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3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.

To connect auxiliary relay outputs:

1. Strip about ¼″ of insulation off the end of each wire to connect.

2. Locate the terminal screws nominated as AL0, and ALC. The negative end of the auxiliary output (already linked on its positive end to its source) should be connected to AL0; and the negative end of auxiliary output's source should be connected to ALC.

3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.

To connect electrical current sensor:

1. Strip about ¼″ of insulation off the end of each wire to connect.

2. Locate the terminal screws nominated as CT1, and CT2. One end of the electrical current sensor should be directly linked to CT1 screw terminal; and the remaining end should be connected to CT2.

3. Turn terminals screws counterclockwise until their gaps are wide open.

4. Insert the uncovered wires all the way in in their corresponding lines.

5. Turn the screws clockwise until all connections are tight.

4. Touchscreen's Navigation and Configuration Manual

OEM's Customization Options

The default graphic HMI arrangements for each HMI can be altered, in case it's requested to the manufacturer, corresponding to customer preferences. For illustrative purposes, this manual adheres to the basic graphic configuration.

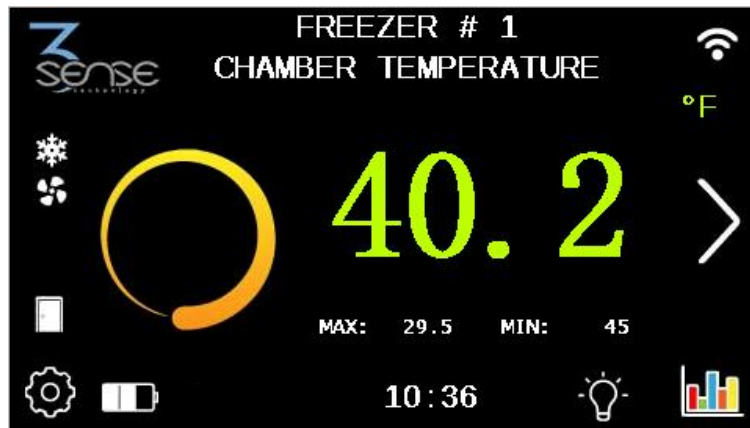To order a custom setup, contact manufacturer for OEM solutions.

4.1. Screens

The following images indicate device's initialization. It is recommended to wait near 20 seconds after seeing them to undertake normal interaction with the interface:

Next screens correspond to the standard application of the device:

4.1.1. Sensors' Measurements Screens

On this frames are shown the real time measurements made by the sensor signed over display's upper zone. The sensed value is accompanied by each sensor's assigned animation, its maximum and minimum records thorough the day, a small reference to its unit on

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screen's top margin, plus multiple icons, buttons and labels located as explained ahead.

If it's true that HMI's operators can visualize real time readings made by each instrument changing pages, using the horizontal arrow button located on the right edge of the screen, the display is programmed to return to the original scene after a certain recess. This, since in the process to which the device is aimed, there is a control variable with greater relevance.

Icons, buttons and labels located over superior fringe

These indicators inform that the central controller recognizes a transmitter that, in turn, is connected to a wireless network, and a server (waves for Wi-Fi, bars for alternative technologies). In addition, it graphically illustrates the intensity of the communication signal.

It works like a button that redirects to the Wi-Fi Configuration Screen.

In case the New Beta is not enabled to transmit wirelessly, the system exposes it to the icons shown below:

SENSOR'S NAME

Provides the name of the sensor that concerns the screen.

Icons and buttons located over left fringe

This mark can be seen each time the controller turns on the compressor of the cooling system it manages.

It only appears when the process has entered defrost phase.

This mark can be seen each time the controller turns on the fan in the main chamber.

Indicates that the connected auxiliary output is activated. It is not shown when it is deactivated

With this icon it is shown that main chamber's door is closed. If, on the other hand, said door is open, it is notified with the following image:

Located in each Sensor Measurements Screen, it allows access to the Specific Parameter Configuration Screens.

Icons and buttons located over inferior fringe

If enabled, this symbol reveals the charge level of the DC source of the New Beta assembly, as long as it is plugged in. If it is disunited, it is indicated as follows:

If New Beta doesn't receive AC power, depending solely on its battery, this icon can be seen.

00:00 (CURRENT TIME)

The time label, in addition to serving to inform the time programmed for the system, allows access to the Time and Time-Zone Setting Screen

This, in turn, is another indicator and button linked to the switching on and off of a lamp subordinated by the controlling device. It is understood that if such a lamp is not energized it is indicated as follows:

This figure allows access to the specific historical record of each variable (Graph), depending on the screen from which review is intended.

Icons and buttons located over right fringe

This is a navigation button that allows to visualize the real-time measurement made by a sensor, different from the one reviewed, on its corresponding screen.

4.1.2. Wi-Fi Configuration Screen

Entering this frame allows, among other settings, configuration of both the access point (AP) to which the Wi-Fi module will connect, and the IP address to which it will send the measured data.

To completely set Wi-Fi Configuration, go to the Wi-Fi Configuration section.

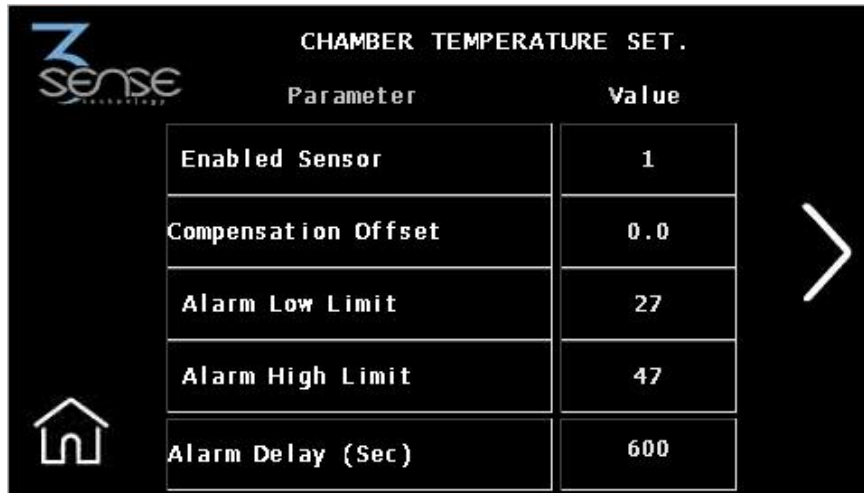Here, is also exhibited a button located as explained:

Icons and buttons located over left fringe

You can return to main sensor's page using this button.

4.1.3.   Specific Parameter Configuration Screens

In these tables are registered several parameters corresponding to configuration relative to input/output appliances, and general operational settings for the New Beta assembly.

Next, icons and buttons found close to these records are reviewed. Further information concerning these screens may be found on next section:

Icons and buttons located over left fringe

In this context, this button allows you to return to the previously seen Parameters' Configuration Table.


You can return to main sensor's page using this button.

Icons and buttons located over right fringe

In this context, this button allows you to move to the following Parameters' Configuration Table.

4.1.4. Graphs

You can access graphs of historical data after pressing the Chart Button on any Sensor's Measurements Screen. As expected, the record accessed through a sensor's page would only draw its particular reads.
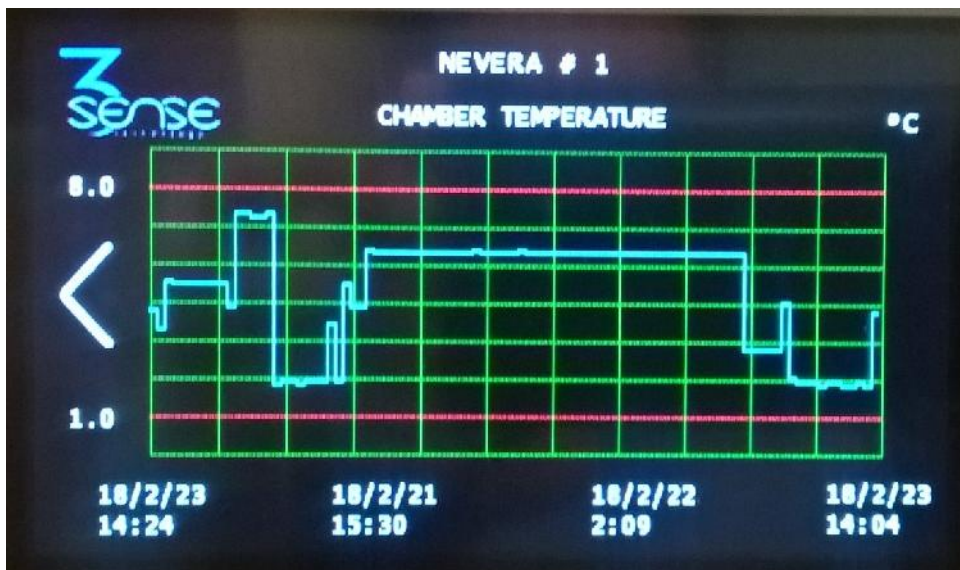
The chart shows, besides the graph, a time scale on its horizontal axis, a reference to the units used for the vertical axis on screen's top margin, and the current maximum and minimum allowed limits (red strips) for the variable named on screen's title.

It can also be seen a button located as explained:

Icons and buttons located over left fringe

This serves to return to main sensor's page.

4.1.5. Time and Time-Zone Setting Screen

Contains a form that gives freedom to adjust current time and time-zones. However, the device syncs its time every 48 hours through internet.

Icons and buttons located over left fringe

You can return to main sensor's page using this button.

Icons and buttons located over right fringe

Adds a unit to the number in the previously selected box.

Subtracts a unit from the number in the previously selected box.

4.2. Device Setting with Touchscreen

After entering the Specific Parameter Configuration Screens instance (see section 4.1.1.), access is granted to multiple tables that, for the default configuration, allow modifying parameters related to peripheral devices, or general configuration parameters.

Every Parameter Configuration Screen is labeled on its upper edge to clarify if the table it contains refers to parameters of a specific output, input, or to general device settings.

Remember that New Beta comes as a factory set window controller for the temperature of a conventional refrigerator's main chamber.

4.2.1. How to alter parameters values

To configure a specific parameter, follow the steps listed below:

1. Locate it in the table that includes it. Consider that these are ordered so that the tables that allow configuring parameters of the output elements are displayed first, and then those that allow the modification of the general operating parameters are presented.
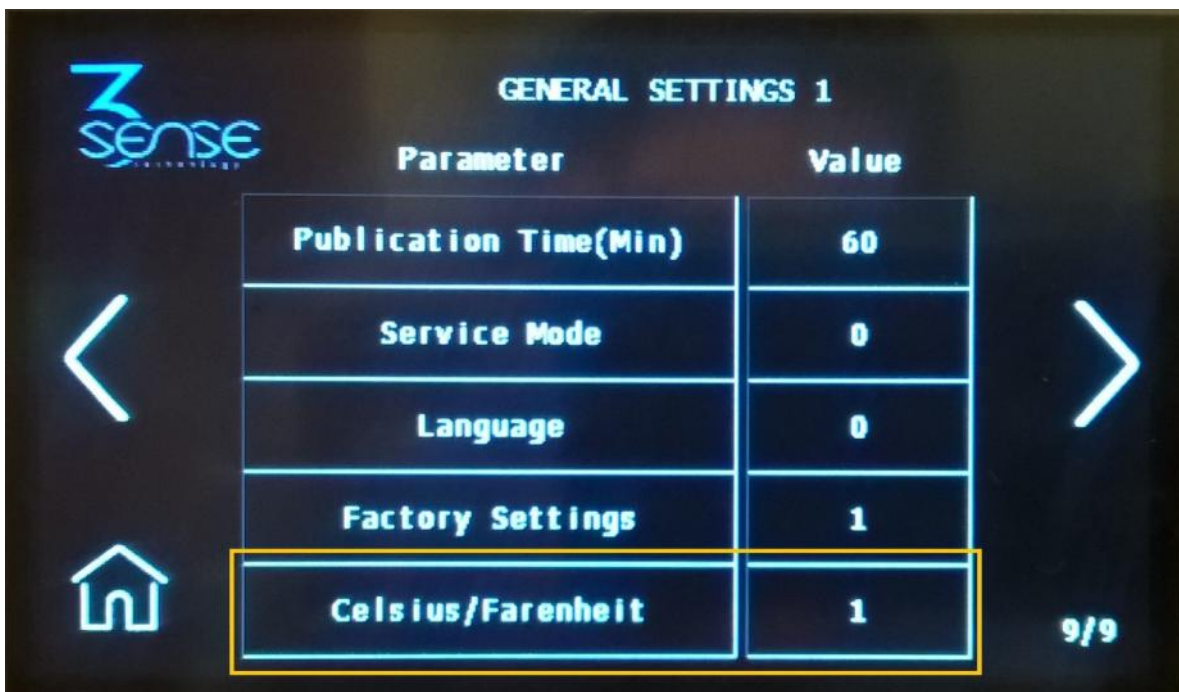

2. Touch the box with the value of interest to be redirected to the keyboard screen.

This device is part of 3Sense 4.0 product family
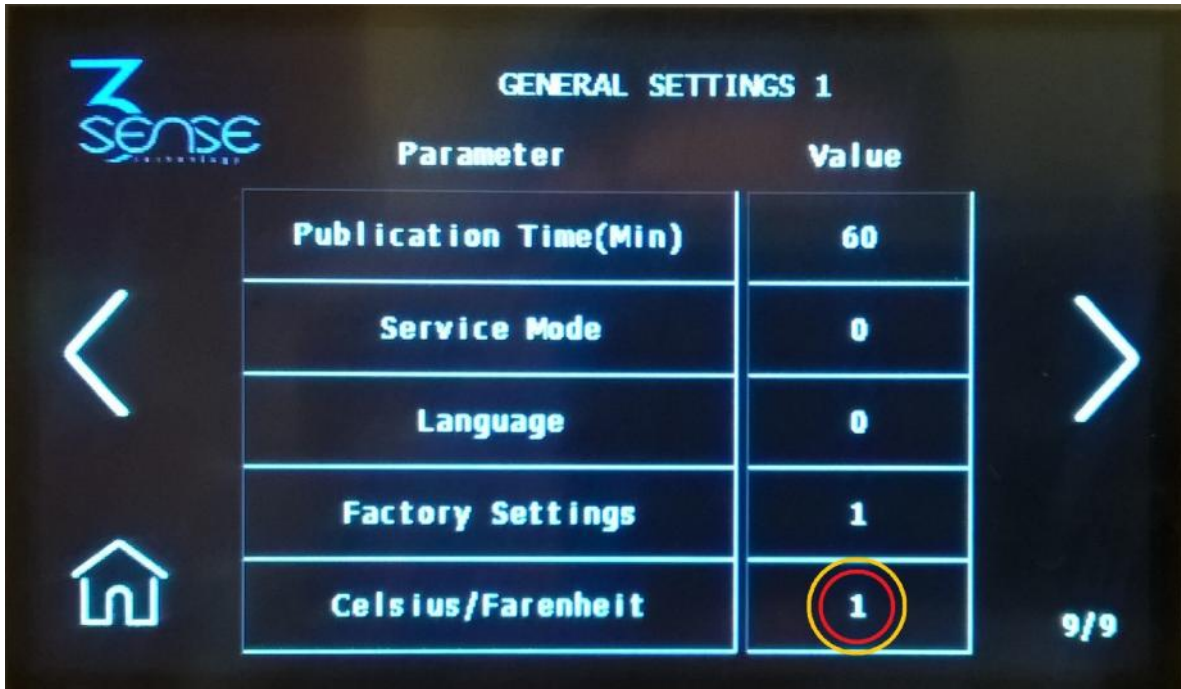
3. If upon seeing the keyboard screen you are required to enter a password that enables further modification, type it and then press ENTER. The original password is 333.
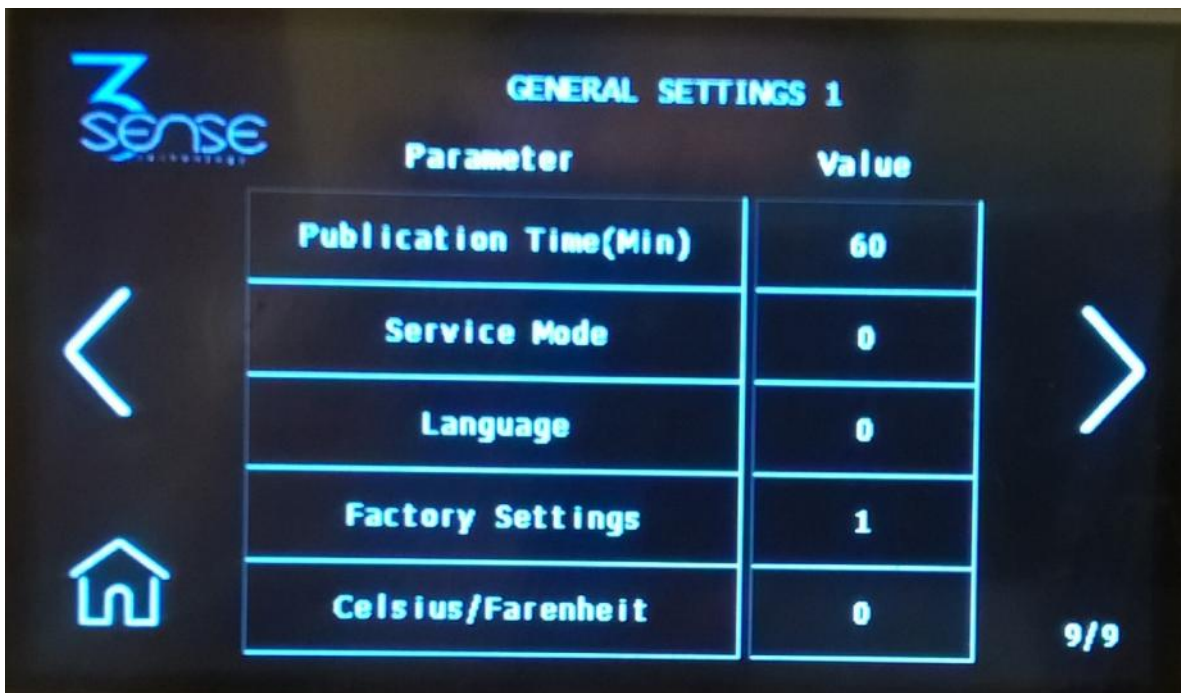
After this, you will be returned to the table seen before, so you must return to the previous step on this list.
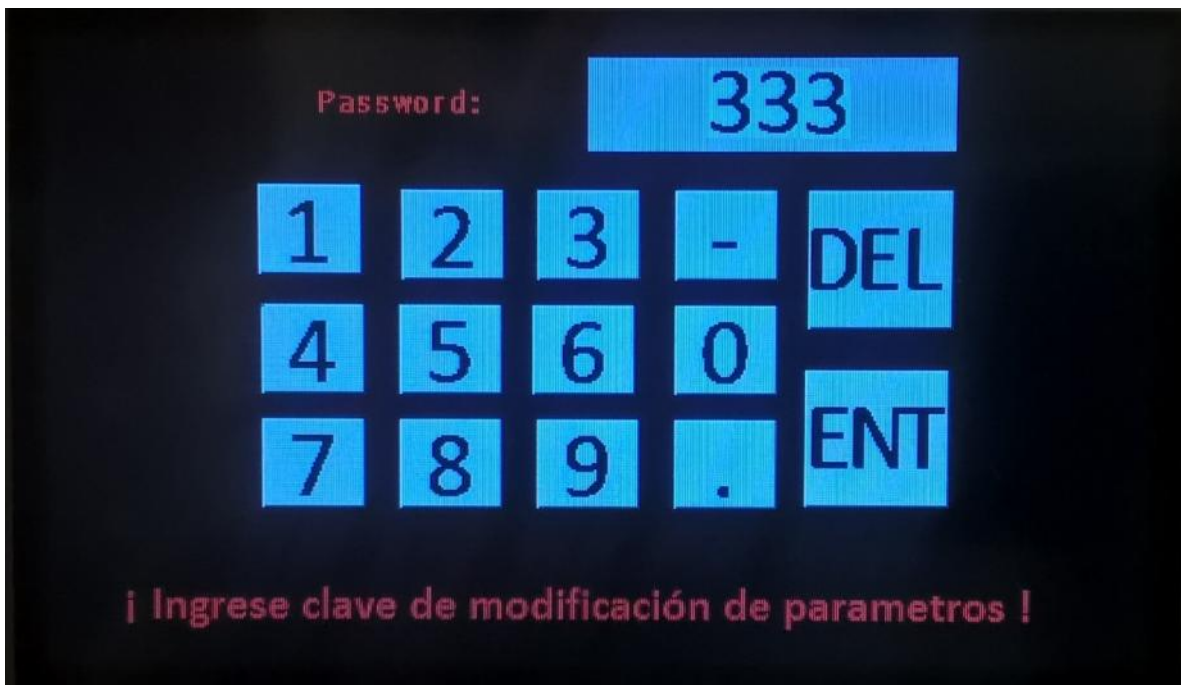
4. If you are not asked for a password, upon entering the keyboard screen, type the value you want for the variable of interest and then press ENTER.
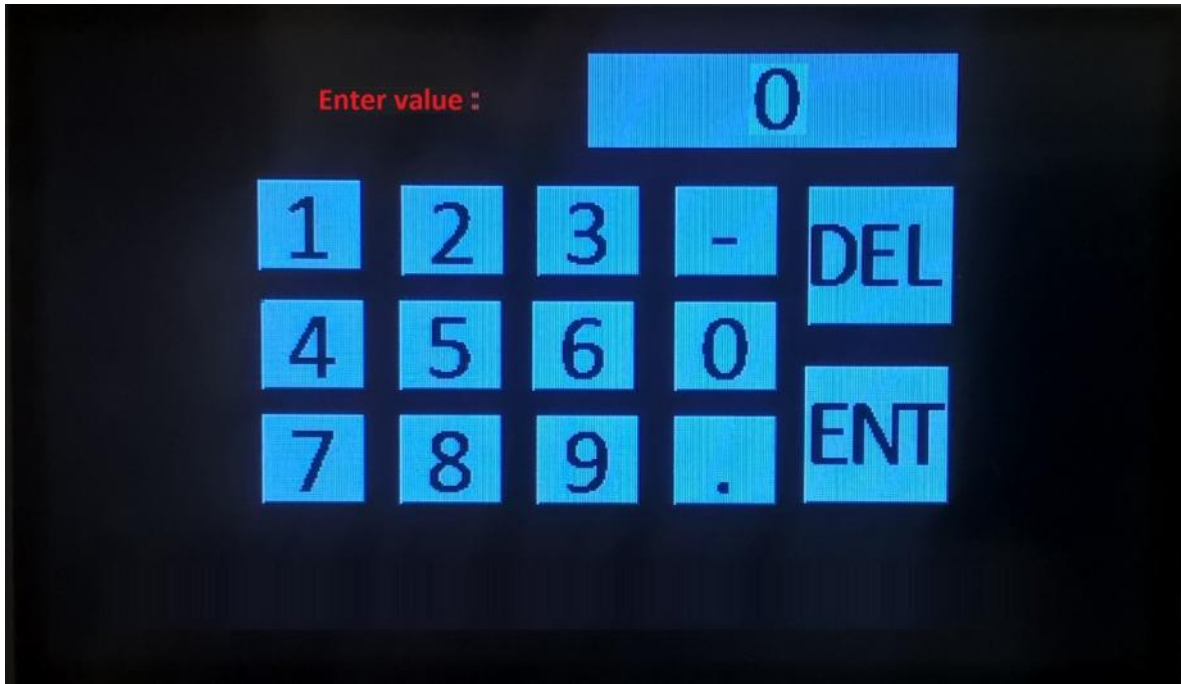
5. Verify that the value was effectively altered.

5. LED Panel's Navigation and Configuration Manual
5.1. Front Panel Cover

Users who prefer the LED Panel for the New Beta could visualize on HMI's front cover: readings made by each sensor in real time; admissible limit values for the main control variable; indicators that inform when a specific output appliance is activated, or when the system is ready to configure its Wi-Fi transmission; visual alarms related to scheduled events for the particular application of the system; a bar that indicates the percentage of battery charge, if connected; and auxiliary buttons to navigate thru the LED Display , and to manually control the behavior of some outputs.

The default layout of this panel is presented below:

5.1.1. Sensors Measurements Visualization

Since in the conventional application for the New Beta, the temperature of refrigerator's main chamber is assumed to be the most relevant control variable, it is continuously shown on the front panel LED display.

To review measures different from the main variable, the user must briefly press (for about 1 second) the Up button ( ), located at the bottom of the panel.

Finally, after several seconds of inactivity (about 5 seconds), the LED display returns to the current value of the main control variable.

5.1.2. Main Control Variable Limits Visualization

To check the admissible limits programmed for the main control variable, the system's administrator must first visualize its measure on the screen, and then briefly press (for about 1 second) the Down button ( ) on the front panel.

After several seconds of inactivity (about 5 seconds), the LED display returns to the current value of the main control variable.

5.2. LED Panel's Parameter Settings Mode

If system's administrator desires to change the system's configuration, he must first enter the Parameter Settings Mode as indicated by the following steps:

1. While in the main screen (where the most relevant measurement is displayed), press the CONTROL button on the panel for 2 seconds.

2. Increase or decrease the value that appears next, using the Up ( ) or Down ( ) buttons, until it corresponds to the password for accessing Parameter Settings Mode; this, by default, is 221.

Then, press CONTROL again.

3. Verify the outcome of the process by reading what's shown on the screen; if it's different from a numerical value, the operation has been successful.

Remember that after several seconds of inactivity (about 5 seconds), the LED display returns to the current value of the main control variable.

5.2.1. How to alter parameters values

Once the administrator has entered the Parameter Settings Mode, he would be able to see the labels of the modifiable control parameters. To display different labels, press the Up ( ) or Down ( ) buttons.

To alter the value of a specific parameter, consider the following steps:

1. Locate the parameter of interest.

2. Press the CONTROL button to access the parameter value.

3. Increase or decrease the value you see with the Up ( ) or Down ( ) buttons until it corresponds to the value you desire.

4. Satisfied with the value, press CONTROL. By doing so, you will be returned to the parameter labels' navigation screen.

Remember that after several seconds of inactivity (about 5 seconds), the LED display resumes to show the current value of the main control variable.

5.3. LED Panel's Wi-Fi Configuration Mode

To enter this mode, the user must change temporarily the ID (labeled as Id) parameter and set its value as 0. For this, follow the steps on section 5.2.1.

This mode allows, among other settings, configuration of both the access point (AP) to which the Wi-Fi module will connect, and the IP address to which it will send the measured data.

To completely set Wi-Fi Configuration, go to the Wi-Fi Configuration section (section 7).

6. Parameters Summary

Next, a catalogue that contains all parameters that may be altered after entering LED Panel's Parameter Settings Mode or Specific Parameter Configuration Screens (for this, review sections 4.1.1. and 5.2.), is presented.

Parameters relative to the sensor from which screen the Specific Parameter Configuration Screens were accessed; or characterized by the number indicated in Parameter's label:

Parameter Name	LED Panel's Parameter Label	Description
Enable Sensor	I2.F, I3.F...	Binary parameter that enables or disables sensor monitoring to which the table (or label) corresponds. Receives 1 or 0.
Offset	Ad.01, Ad.02...	It stablishes the value that is added to the corresponding sensor measurement to calibrate it.
Alarm Low Limit	AL.bA	Sets the minimum value that the sensor must measure to trigger inbuilt system's alarm.
Alarm High Limit	AL.AL	Sets the maximum value that the sensor must measure to trigger inbuilt system's alarm.
Alarm Start Delay (sec)	SIL.t	Indicates the seconds that the system's alarm takes to activate, after the variable measured by the corresponding sensor exceeds its maximum or minimum admissible values.

Parameters to configure compressor behavior:

Parameter Name	LED Panel's Parameter Label	Description
Enable Output	--	Binary parameter that can't be modified, since the operation of the compressor must always be enabled.
Comp. Start Temperature	Co.Ar	Sets the maximum temperature that the main chamber must reach to activate refrigerator's compressor; that is, its maximum admissible temperature.
Comp. Stop Temperature	Co.PA	Sets the minimum temperature that the main chamber must reach to stop refrigerator's compressor; that is, its minimum admissible temperature.
Min. Stop Time (min)	--	Sets the minimum time that the compressor stays off. It's convenient to balance gas pressure in coolant's circuit and avoids compressor overload, increasing its lifespan. It also serves as dripping time after finishing the defrost cycle.
Min. Oper. Time (min)	--	It refers to the minimum time it is allowed to have the compressor operating.
Max. Oper. Time (min)	t.LAr	It refers to the maximum time it is allowed to have the compressor operating. Limits compressor's work, protecting it from overheating that could cause some system failure (such as leakage of coolant,

Parameter Name		Description
		or damage to main chamber's sensor).
Start Time Delay (sec)	t.Inl	Indicates the seconds it takes for the compressor to start, after the conditions for it to start operating have been met.
Comp. Status Sens. Fault	F.SEN	Binary parameter that allows or disables the operation of the compressor when a fault is detected in main chamber's sensor. It is recommended to only assign 1 to this parameter if the system must keep frozen products.

NOTE: It is recommended to set Start Time Delay for a minimum period of 2-5 seconds.

Parameters to configure the defrost appliance:

Parameter Name	LED Panel's Parameter Label	Description
Enable Defrost	--	Binary. 1, enables the execution of the defrost cycle; 0, disables it.
Defrost Class	--	Indicates to the control system the defrost method that the refrigerator can use: 0, for defrost due to inactivity of the compressor; 1, for defrost with thermal resistance.
Def. Start Temperature	--	Sets the minimum temperature that the main chamber must reach to start the defrost cycle.

Def. Stop. Temperature	t.dEF	Sets the maximum temperature that the main chamber must reach to stop the defrost cycle.
Temp. Start Delay (min)	--	Indicates the seconds it takes the defrost cycle to start after the conditions for it to start are met.
Defrost Period (hours)	PEr	Sets the hours the system waits to repeat the defrost cycle.
Max. Defrost Time (min)	dUr	Sets the maximum time desired for the defrost cycle.
Open Door Start Delay (min)	--	Sets the minutes that refrigerator's door must remain open to start the defrost cycle.
Start/Stop Manual Defrost	( ) + ( )	Starts/Stops the defrost cycle manually. This parameter only receives 1 or 0.

Parameters to configure main chamber's fan:

Parameter Name	LED Panel's Parameter Label	Description
Enable Fan Output	--	Binary. 1, enables the operation of main chamber's fan; 0, disables it.
Fan On. Comp. Off	HF.Co	To allow the fan to operate while the compressor is stopped, assign 1 to this parameter; otherwise, assign 0.
Fan Time On (sec)	--	Sets the seconds that main chamber's fan is kept turned on.
Fan Time Off (sec)	--	Sets the seconds that main chamber's fan is kept off.
Fan On Defrost (Fan & Defrost)	HF.dF	To allow the fan to operate during the defrost cycle, assign 1 to this parameter;

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		otherwise, assign 0. It is recommended to keep this parameter at 0 if the refrigerator uses a thermal resistance for its defrost cycle; however, if you execute the defrost only by stopping the compressor, this parameter can be 1.
Dripping Time (min)	--	Refers to the lapse in which fan remains inactive during the defrost cycle.
Open Door Start Delay (min)	t.FPt	Sets the minutes that refrigerator's door should remain open to turn on the fan.

Parameters to configure system's alarm:

Parameter Name	LED Panel's Parameter Label	Description
Enable Alarm	H.SON	Binary. 1, enables the operation of the inbuilt alarm; 0, disables it.
Open Door Start Delay (sec)	SI LP	Sets the minutes the refrigerator door must remain open to activate the alarm.
Alarm Rest (sec)	--	The system is programmed to activate the alarm during cycles of 2 seconds, while the conditions for it to be active are satisfied. However, this parameter sets the seconds that the alarm remains inactive, between each cycle, until it is activated again. So if this parameter is assigned 0, the alarm will sound continuously.

Parameters to configure auxiliary outputs and inputs:

Parameter Name	LED Panel's Parameter Label	Description
Enable Light Output	--	If the user wishes to manually turn on the light in refrigerator's main chamber, assign 1 to this parameter. Otherwise, assign 0.
Aux. Input Function	--	Left to be programmed, if required.
Aux. Output Function	--	Left to be programmed, if required.
Enable Door Sensor	--	Binary. Enables or disables the reading of the door sensor.
Enable Battery Monitor	H.bAt	If it is set to 1, it allows you to view the status of the system's battery.

Parameters that refer to general settings:

Parameter Name	LED Panel's Parameter Label	Description
Publication Time (min)	tPU	It affects the time the wireless communication module waits to send data through the network to which it is connected.
Service Mode		Receives a binary value: 0, to disable. 1, to enable a state that allows remote manipulation of the actuators of the system. Service Mode is employed to provide remote counseling to the New Beta, if it exhibits unusual behavior.
Language		1, allows to see all tags in English. 0, for Spanish.
Factory Settings		Binary. Value 1, sets all parameters to their default

This device is part of 3Sense 4.0 product family

		values.
Celsius/Fahrenheit		Receives a binary value: 0, to disable; 1, to enable every sensor's measurements to be made with SI units.
--	Id	Controller ID. Useful to identify devices over the same field, and the messages that each of them transmits to the remote monitoring platform.
--	bLq	Stablishes an access level to parameters modification: 0, to enable free modification of the parameters; 1, to disable the modification of the other parameters; 2, to protect the modification to the parameters with factory password.

7. Wi-Fi Configuration

When accessing this instance (either from Touchscreen's Wi-Fi Configuration Screen, or LED Panel's Wi-Fi Configuration Mode), the Wi-Fi module attached to the device generates a local Wi-Fi network (whose SSID is the prefix "3Sense_", followed by Main Unit's factory ID: 3Sense_ [Factory ID], and its password is 3Sense3.0; as shown in Touchscreen's Wi-Fi Configuration Screen), to which any device ready for internet navigation (such as a mobile smartphone, or a PC) can connect.

Only after engaging to said network, a page identified with the IP address: 192.168.4.1 (whose interface is shown below), can be displayed:

3SENSE

EXTRAORDINARY IS OUR LIMIT
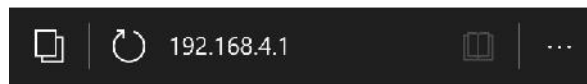
This, nominated in this section from now on as Home Page, directs to a pair of forms where you can specify the SSID and password of the network through which the new Beta will connect to the Internet, and the IP or URL of the server to which the data to be published will be sent (in addition to other details, such as the name of the sensors connected to the Main Unit).

7.1. Connect New Beta to a Wi-Fi Network

To set the SSID of the network to which the device will be connected, proceed as follows:

1. On the Home Page, press the Configure Wi-Fi button to be directed to a page where you can see a scan of Wi-Fi networks detected by the device as available, two input fields, and two buttons (Save and Scan).

3SENSE

OMICRON1	100%
ConsulsarSAS	94%
MARIAPRECIADO	40%
GUTIERREZ	36%
Agencia De Seguros	28%
HP-Print-16-LaserJet 1102	26%

OMICRON1

password

save

Scan

EXTRAORDINARY IS OUR LIMIT

192.168.4.1/scan
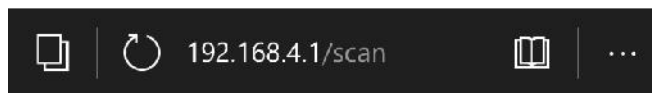
2. In the form at the bottom of the Configure Wi-Fi page, enter the credentials (SSID and password) of the network to which you want the New Beta to connect, and then press the Save button.

If the credentials you entered are invalid, the next page will appear:

3SENSE

Credentials NOT Saved
Invalid SSID

Back to Home

EXTRAORDINARY IS OUR LIMIT

192.168.4.1/wifisave?ssid

Otherwise, you will see:

3SENSE

Credentials Saved
Trying to connect your 3Sense to
network.
If it fails go to WiFi Config and try
again

Back to Home

EXTRAORDINARY IS OUR LIMIT

192.168.4.1/wifisave?ssid

7.2. Define Server Endpoint

On the other hand, to configure the address of the server to which the data will be sent, and its port, follow these steps:

1. On the Home Page, press the Other Settings button to be directed to a page where a form where the address of the endpoint and its port can be typed-in.

(As indicated earlier, on this page you can also assign names to the sensors connected to the New Beta).

3SENSE

Other Settings

SERVER IP

SERVER PORT

SERNSOR 1 NAME

SERNSOR 2 NAME

save

EXTRAORDINARY IS OUR LIMIT

192.168.4.1/other_sets
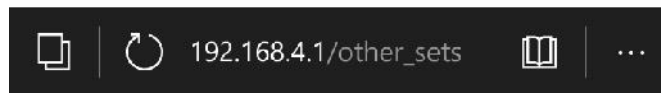
2. On that form, typewrite what needs to be modified, and then press the Save button.

After this last step, the page will respond as follows:

3SENSE

Other Settings Saved

Back to Home

EXTRAORDINARY IS OUR LIMIT

192.168.4.1/save_other_s
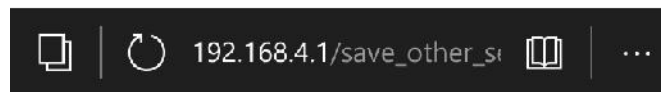
Finally, if you wish to see the factory ID of the wireless connection module that is being configuring, the firmware version it uses, its MAC, and its latest dynamic IP:

On the Main Page, press the More Info button to be directed to a list with all this data.

3SENSE

Chip ID: 14237262

Last Dynamic IP:

Station MAC: 5C:CF:7F:D9:3E:4E

Software WiFi Version 3.0.1

Back to Home

EXTRAORDINARY IS OUR LIMIT

192.168.4.1/info
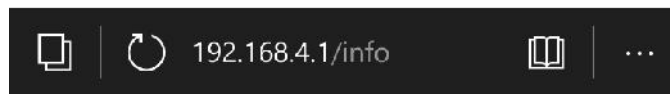
NOTE: Ensure that your endpoint IP address, or URL, is set before using the New Beta in an actual automation environment.

8. 3Sense Remote Monitoring and Control Platform
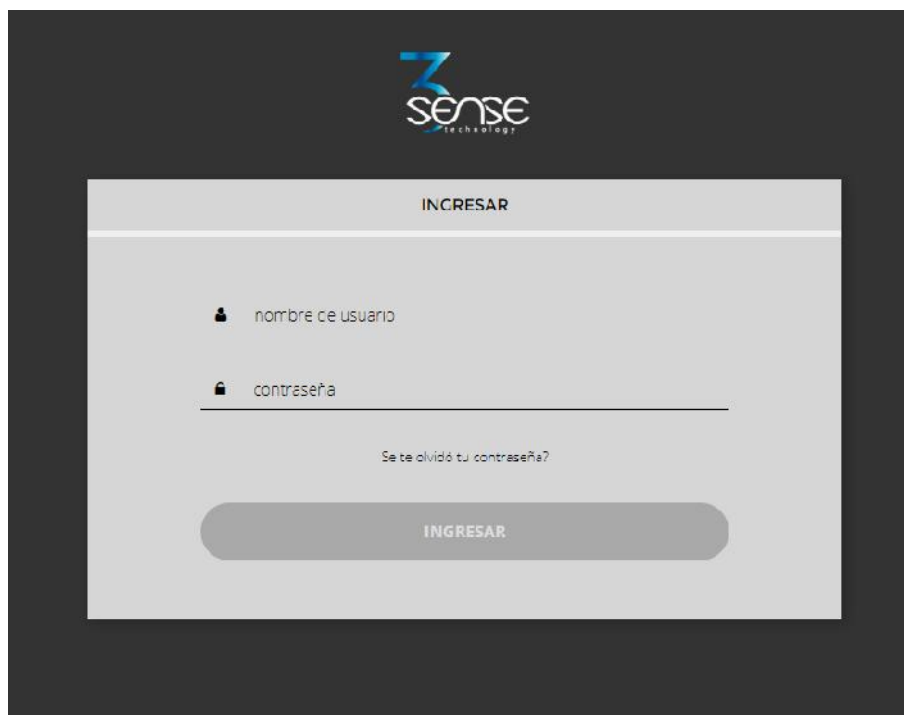
3Sense 4.0 devices, like New Beta, work in conjunction with WEB platform.

Users can access platform, via WEB or APP, to perform, among other things:

- Remote monitoring and visualization of historical data records, in graphs and data tables, from up to 2 years.
- Alarm management for variables out of range, battery levels and main power supply fails.
- Add comments to alarm records.
- Set alarm limits, among other custom settings like sensors' names.
- Set alarm events such as e-mail or SMS notifications.

8.1. Access to platform

Using the credentials provided by the manufacturer, devices' administrators can log in at login.3sense.tech:

The platform uses some basic elements to organize the information it manages, and facilitate interaction with users. These are: Dashboards, Devices and Events.

An introduction to the use of each of them will be offered in this guide.

8.2. Reviewing Historical Data

Dashboards are interfaces where relevant data is presented to the users. allows to create custom Dashboards to integrate any information desired (if using an account with permission to do so); however, by default it offers panels for remote monitoring of the data published by each device linked to the platform, and panels to display Alarms or Events that have recently occurred.

To review a Dashboard, initially follow what is indicated in 1.1, to access the platform.

Once inside, you can find the link to the section that includes all the Dashboards available to your account, by clicking on the icon. Then, you can select the Board of your interest:
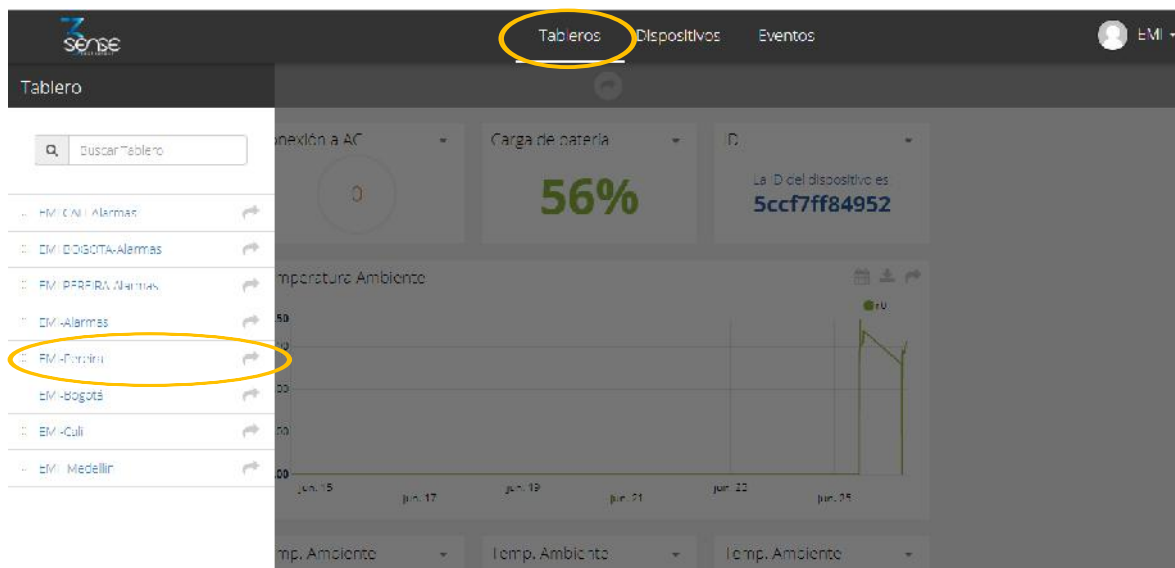
After selecting a particular Dashboard, the user is able to see the information that corresponds to said panel in multiple graphs and visual elements:
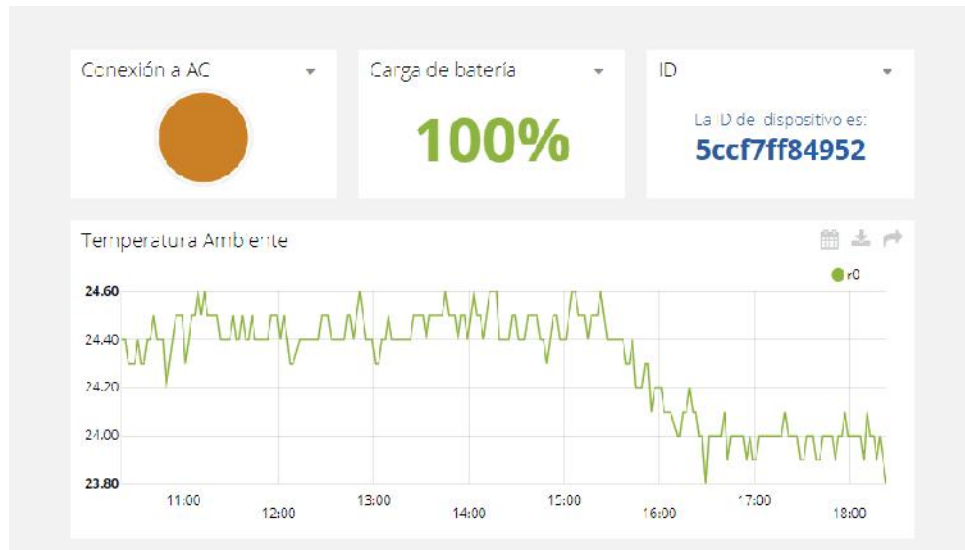
To learn how to modify said elements and how to configure a Dashboard, refer to the recommended manufacturer's guide.

8.3. Reviewing Devices, their Variables, and Configuration

A Device, is a virtual representation of a physical device that takes data from sensors and transmits them through a particular network to the platform. Thus, each Device visible to an account receives the data of the physical equipment acquired by the administrator of said account.

The data received by a device is stored and organized in multiple variables.

To review a specific Device, initially follow what is indicated in 1.1, to access the platform.

Once inside, you can find the link to the section that includes all the available Devices to your account and select the Device of your interest:
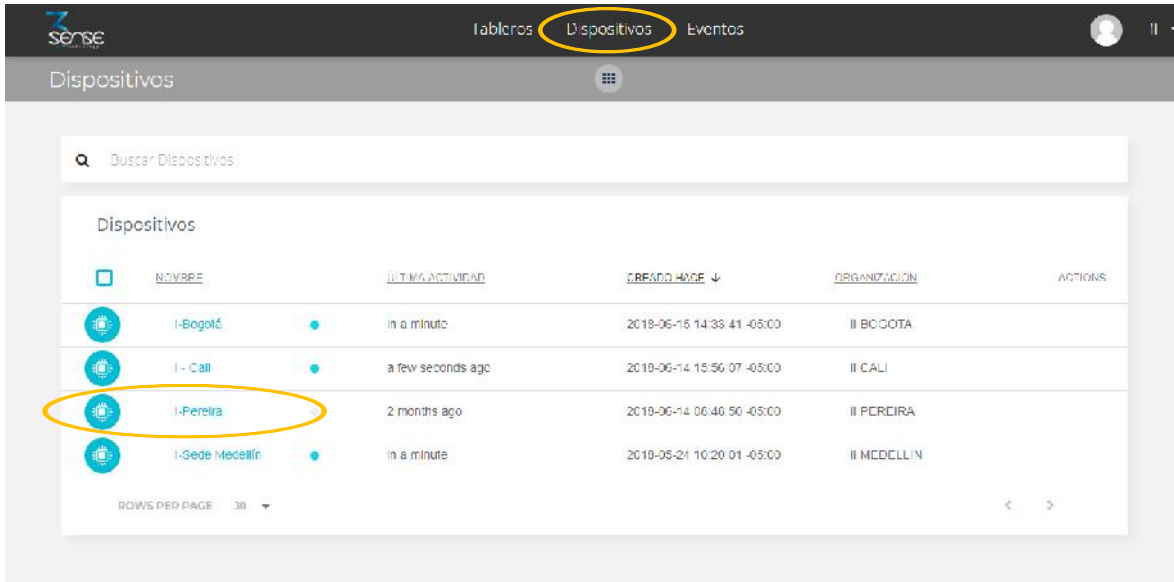
After selecting a particular Device, the user is able to see the information that corresponds to said Device in multiple panels and Variables.

Reviewing the Variables of a certain Device allows checking the update status and presence of each Variable. If is suspected that one variable is not being updated properly, after entering the Device panel that should include it, its last activity period could be reviewed.
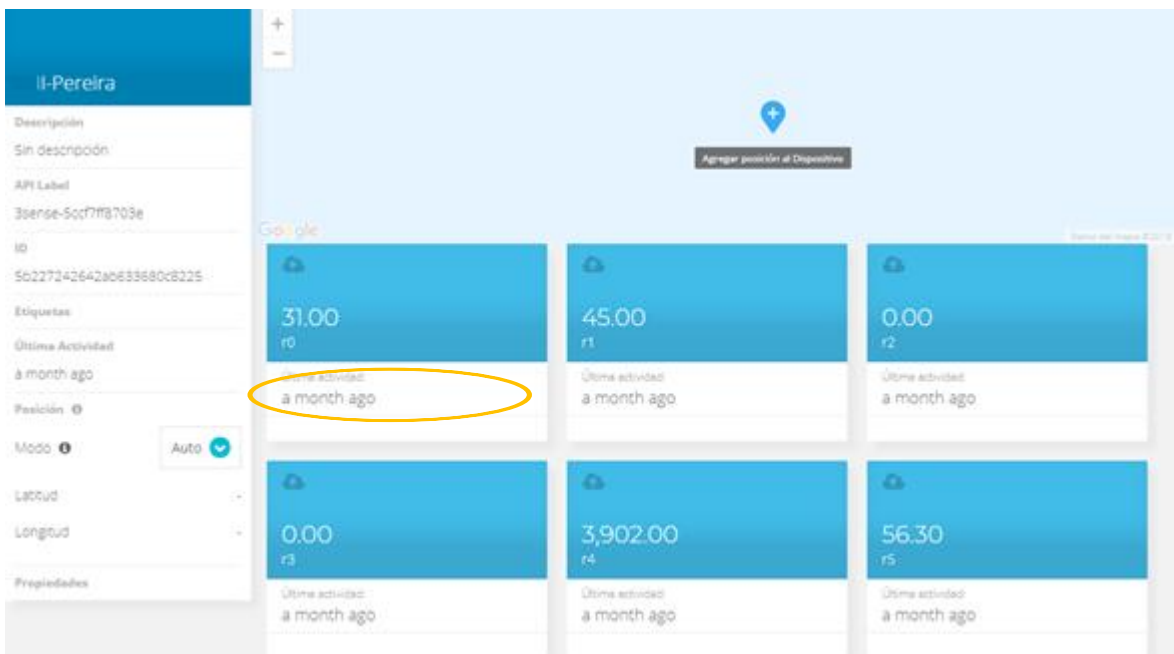
This device is part of 3Sense 4.0 product family

To learn how to modify the elements and configuration of a Device, refer to the manufacturer's guide provided for it.

8.4. Reviewing Alarms and Programmed Events

In the patform, Events (or Incidents) are configurable conditions that activate the sending of alert messages via email, SMS messaging, Telegram messaging or Webhooks. Events that are in condition to send a message, can be reviewed in a Board associated with your account, in whose name the suffix -Alarms is included.

To review an Event, initially follow what is indicated in 1.1, to access the platform.

Once inside, you can find the link to the section that includes all Events available to your account and locate the Event of your interest:
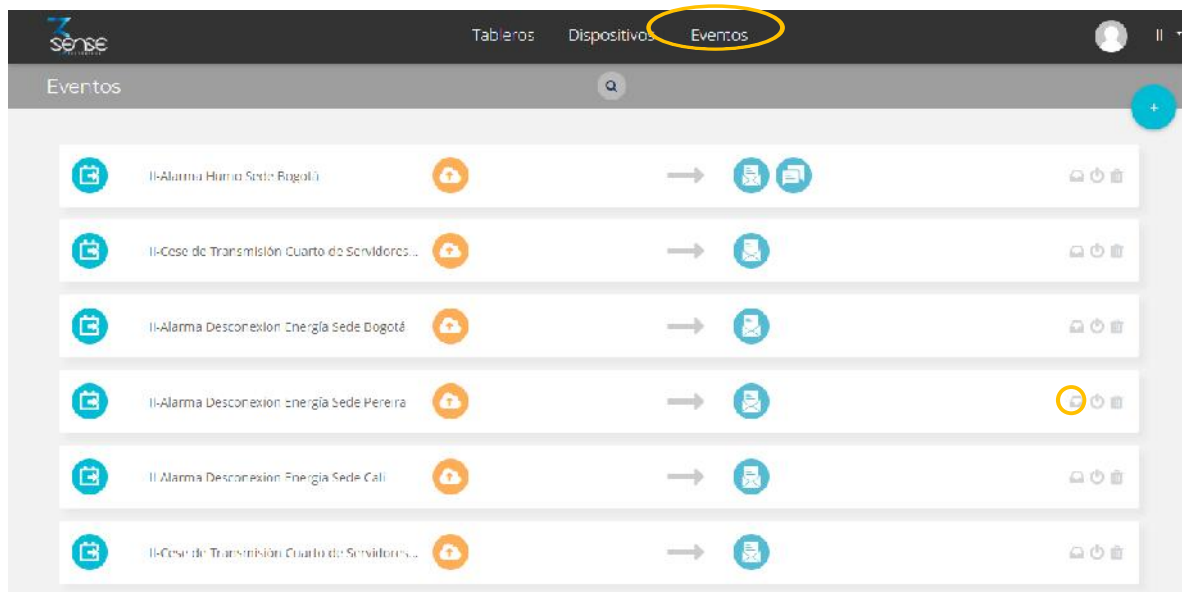
To review the last activity of an Event, the icon associated with each event can be clicked. By doing so, you can view a table like the following:

To review the Dashboard with the recently activated Alarms, refer to section 1.2, and look for the Dashboard whose name contains the suffix -Alarms.

This Dashboard will contain a table like the following:

To learn how to modify the elements and configuration of a Device, refer to the manufacturer's guide, provided for it.

Remember that, if a certain explanation not clear, or you need more assistance, you can contact the 3Sense technical service department. Contact Information can be found at the beginning of this manual.

This device is part of 3Sense 4.0 product family