Sitrad inBOX Ver.01

Supervisory system

HDMI

Serial communication

Ethernet

USB

Wi-Fi

Server

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SITRADINBOXV01-01T-17026

1.SUMMARY

GLOSSARY

HOTSPOT : The name of a particular location where a wireless network (Wi-Fi technology) is available for use.

ETHERNET : An interconnection structure for local area networks (LAN) - based on the packets shipment. It defines cabling and electrical signals for the physical layer, in a packet format and protocols for the OSI model's Media Access Control (MAC) sublayer.

DHCP : Enables a server to automatically distribute different IP addresses to all computers as they submit a request to connect to the network. This distribution of the IPs is performed at a predefined interval, configured on the server. Whenever one of the machines is disconnected, the IP will be free for use in another.

HDMI : Stands for High-Definition Multimedia Interface, which is a digital audio and video conductive interface, capable of transmitting uncompressed data, being an improved alternative to analog standards such as radio frequency, VGA, and others.

PROXY : Term used to define the intermediaries between the user and the server. For that reason, it performs the role of connecting the (local) computer to the external network (Internet). Because local computer addresses are not valid for external access, the proxy is responsible for sending the request from the local address to the server by, translating and forwarding it to the computer.

OHMS : The electrical resistancel, a unit of measurement recognized by the International System of Units (SI). The OHMs comprise the ratio of the voltage of a volt to an ampere current.

BROWSER : A software program developed to allow Web browsing, capable of processing several languages, such as HTML, ASP, and PHP. Its interface varies according to the brand, chosen by the user.

USB : Universal Serial Bus, a type of technology that allows the connection of peripherals without having to turn off the computer, as well as transmitting and storing data.

⚠ Have this manual in your hands using the FG Finder application.

WARNING

BEFORE THE INSTALLATION OF THE CONVERTER, WE RECOMMEND READING THE INSTRUCTION MANUAL IN FULL, TO PREVENT POSSIBLE DAMAGES TO THE PRODUCT.

PRODUCT INSTALLATION PRECAUTIONS:
- Before performing any procedure on this instrument, unplug it from the power grid;
- Ensure that the instrument has adequate ventilation, avoiding installation on panels containing devices that could cause it to operate outside of its specified temperature range;
- Install the product away from sources that may generate eletromagnetic disturbances, such as: motors, contactors, relays, electrovalves, etc.;

AUTHORIZED SERVICES:
- The product's installation or maintenance must only be performed by qualified personnel;

ACCESSORIES:
- Only use Full Gauge Control's original accessories;
- If you have any questions, please contact our technical support.

DUE TO ITS CONTINUOUS DEVELOPMENT, FULL GAUGE CONTROLS RESERVES THE RIGHT TO CHANGE INFORMATION CONTAINED IN THIS MANUAL AT ANY TIME, WITHOUT PRIOR NOTICE.

ANATEL

''This equipment is not entitled to the protection from harmful interference and way not cause interference with duly authorized systems.''
''For more information, consult the ANATEL website: www.anatel.gov.br"

2. DESCRIPTION

The **Sitrad INBOX** acts as a data server, providing monitoring information with the **Sitrad** Pro program (Windows application) and Sitrad Mobile (mobile application). The **Sitrad INBOX** is a device capable of managing the data provided by the Full Gauge controllers installed in the communication network, being responsible for collecting, storing, monitoring and making information available.
The **Sitrad INBOX** enables remote access to information from a variety of applications, such as temperature, humidity, pressure and voltage data, from anywhere around the world. It is a versatile tool, which can be applied in several segments, such as supermarket chains, refrigerators, restaurants, hotels, laboratories, among others.
The built-in memory allows users to store controller database and plot graphs. The event log functionality records the parameter changes made by local or remote computers, smartphones, tablets or directly in the controller. This is just one example - the **Sitrad INBOX** preserves the renowned operating features of the traditional Sitrad Service.
The device enables direct connection of up to 32 instruments using its RS-485 communication port. It is also possible to collect controller data through the Wi-Fi, Ethernet and USB converters provided by Full Gauge Controls.

3. APPLICATIONS

- Installations whereby the supervision of a system controlled by Full Gauge controllers is desired.

4. TECHNICAL SPECIFICATIONS

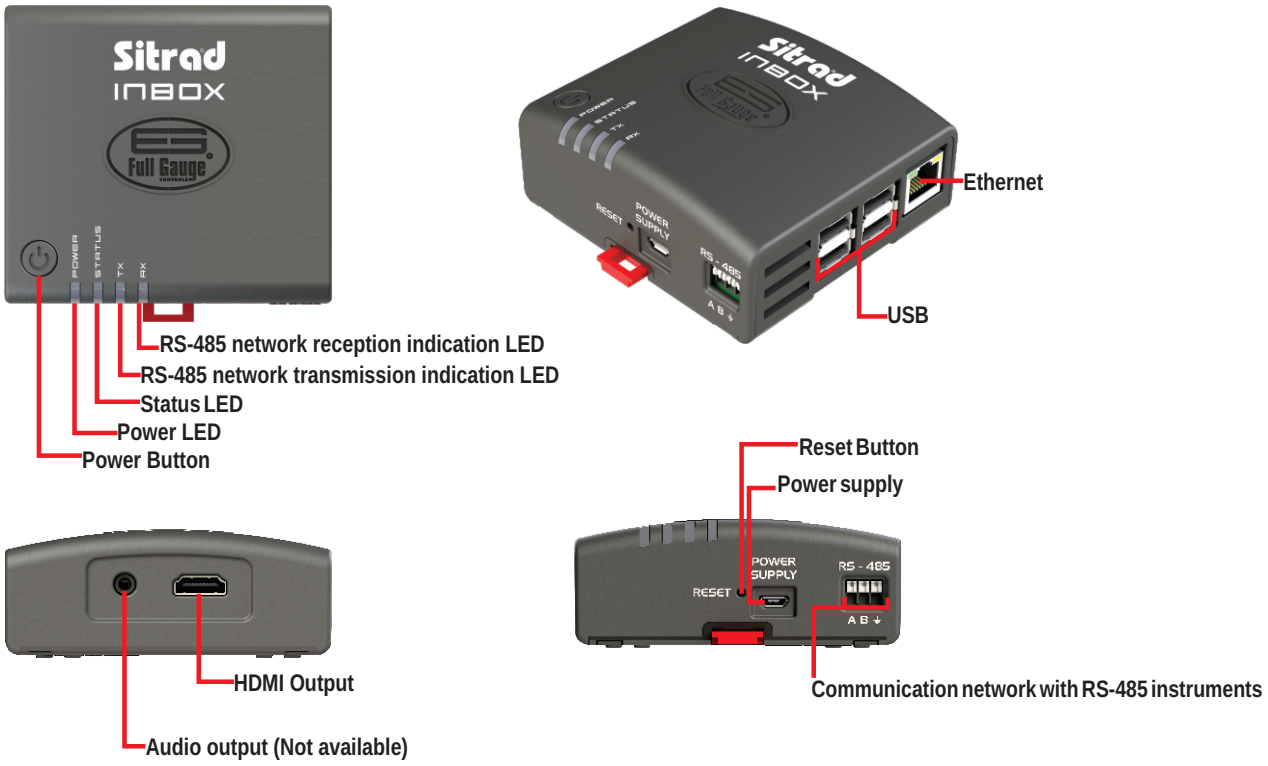
Converter power	External power supply 5,1 Vdc / 2A
Power supply provided with the converter	Input - 100-240 Vac (50/60Hz) - Output: 5,1Vdc / 2A
Operating temperature	0 to 40ºC / 32 to 104ºF
Operating humidity	0 to 90% UR (without condensation)
Ethernet	10 / 100 LAN PORT
Wi-Fi	802.11 b/g/n
USB	4 ports
HDMI	Full Size HDMI*
Internal memory	16GB**
RS-485 Connection	- One isolated RS-485 port for connection of up to 32 instruments.
Product dimensions	91,0 x 91,1 x 37,1 mm (WxHxD)

* - Connection to a HDMI monitor. Used as one of the setting up methods of **Sitrad INBOX.**

** - Shared memory. The default setting takes up 4-6 GB of available space (counting the operating system and application)

IMPORTANT:
For a correct and robust installation of the RS-485 network, see item 10- *Interconnecting the controllers and* Sitrad INBOX.

5. INDICATORS AND BUTTONS



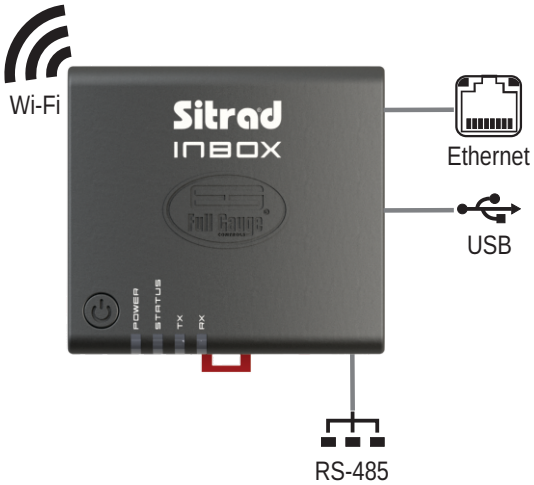
6. SIGNALS

POWER LED / State	STATUS LED / State	TX / RX	Occurrence
Red / On	—	—	Sitrad INBOX off
Green / Flashing	—	—	Sitrad INBOX booting
Green / On	Yellow / Flashing	—	Sitrad INBOX with clock error (1)
Green / On	Blue / Flashing	—	Sitrad INBOX running normally
Green / On	Red / Flashing	—	Sitrad INBOX overheating (2)
—	—	Flashing	Communication between Sitrad INBOX and controllers

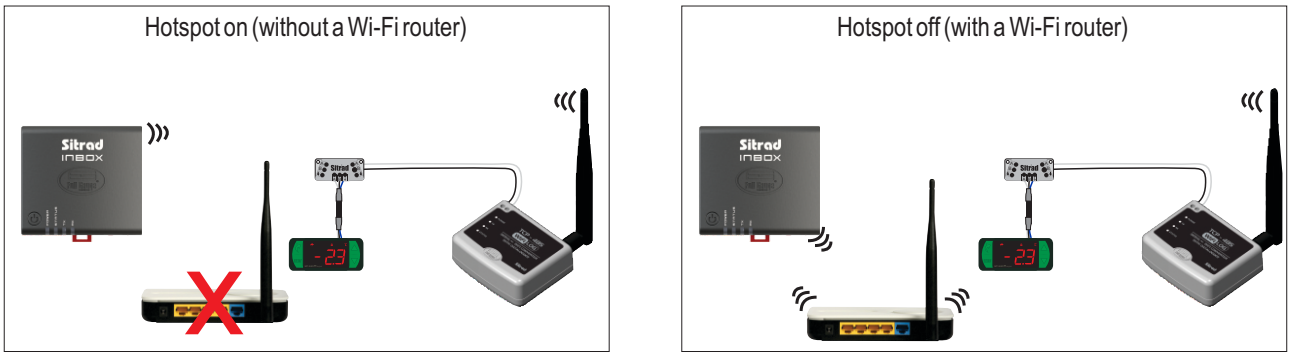
1 - If the Sitrad INBOX is connected to a network with Internet available, the clock will be adjusted automatically according to the time zone specified in the product's settings. Otherwise, please follow the steps described in items 9 and 9.3;
2 - Check the temperature of the environment where the Sitrad INBOX is installed. Remove any sources of heat near the equipment.

7. CONNECTING TO THE CONTROLLERS

The Sitrad INBOX has three connection methods with Full Gauge converters (USB, Ethernet and Wi-Fi) and one method for direct connection to Full Gauge controllers that have serial communication (RS-485).

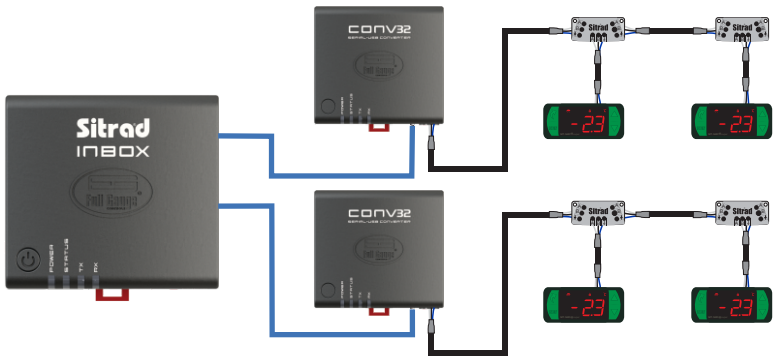


7.1 - Wi-Fi : Wi-Fi converters (**TCP-485 Wi-Fi** and **TCP-485 Wi-Fi Log**) can be accessed through the **Sitrad inbox** in two ways:
- **Hotspot on** : Converters can be configured to connect to the Wi-Fi network provided by the **Sitrad inbox** (without a Wi-Fi router).
- **Hotspot off** : Converters are configured to connect to an existing Wi-Fi network (with a Wi--Fi router), and the **Sitrad inbox** accesses these converters through the same Wi-Fi network

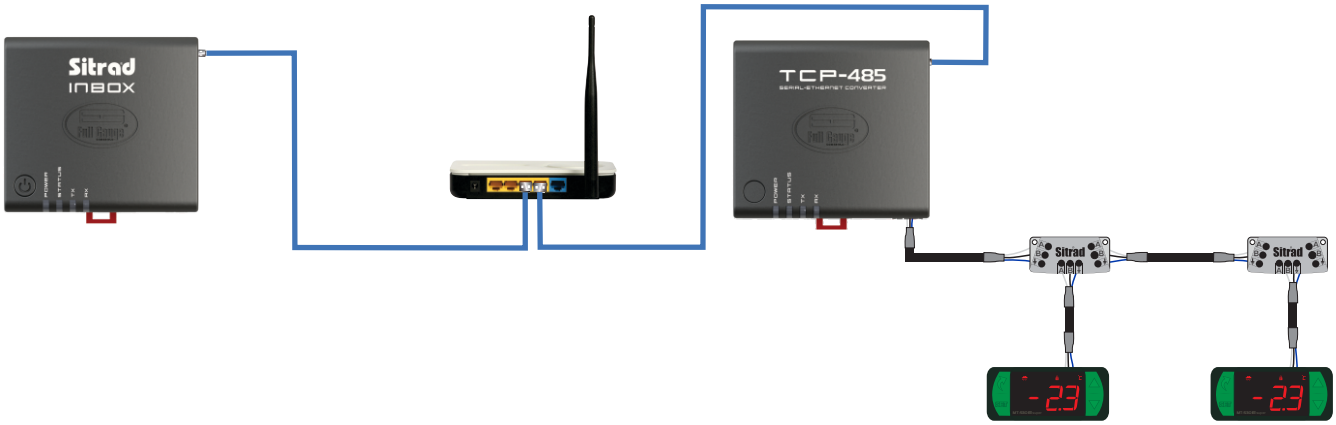


⚠**IMPORTANT: Hotspot is the operation mode in which Sitrad inbox provides other devices with a Wi-Fi network infrastructure to connect to.**

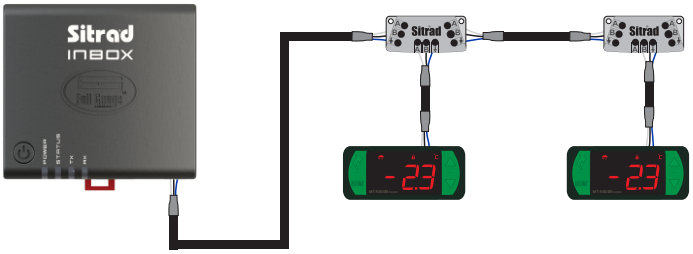
7.2 - USB : Connect the USB cable to the **Sitrad inbox** appropriate input. The other end of the cable should be connected to the **CONV32**. It can be directly connected to up to four USB converters in the **Sitrad inbox** , using the **CONV32** version 03 or higher. If version 01 or 02of **CONV32** is used only one USB can be connected.



7.3 - Ethernet : Connect the **Sitrad inbox** to the router using an Ethernet cable (RJ-45). With another cable (RJ-45), connect the **TCP-485** (Ethernet converter) to the same router.



7.4 - RS-485 : Directly connect the first terminal block to inputs A and B of **Sitrad inbox**, maintaining the ''A-A, B-B'' connection pattern. One terminal block must be used for each connected controller.



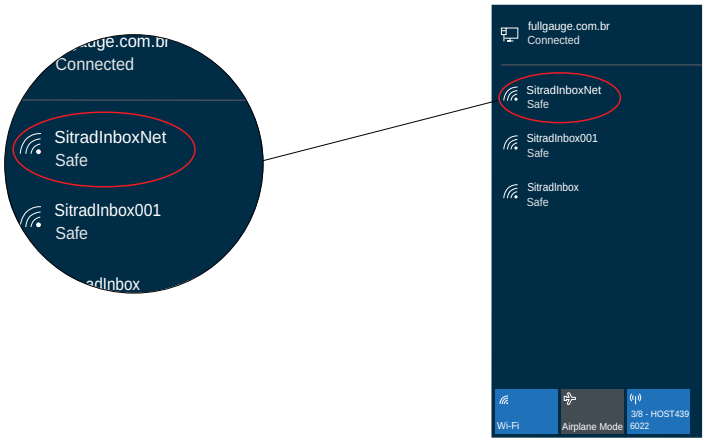
8. REMOTELY CONNECTING THE SITRAD PRO

The **Sitrad INBOX** acts as data server, in which the data collected from the controllers is stored in its internal memory. To view and monitor this data, connect **Sitrad** Pro to **Sitrad INBOX**. Firstly, from a computer, install the **Sitrad** Pro software, available at www.sitrad.com/sitrad-pro. To connect the **Sitrad INBOX** and register the server, proceed as follows:

8.1 - Connecting the Sitrad INBOX

8.1.1 - Hotspot Mode

- From a computer with the **Sitrad** Pro installed, and with access to the Wi-Fi network, locate the **Sitrad INBOX** wireless network and connect to the network named **SitradInboxNet** using the password **sitrad001**.
- **Note** : The network name and password can be modified according to item 9.5 (Wi-Fi).



8.1.2 - Ethernet Mode :

- Connect the **Sitrad INBOX** to a wired Ethernet network that has a computer with the **Sitrad** Pro software installed. If the network being used is in DHCP mode, please follow steps 8.8 and 8.9 of the section **''Registering the Sitrad inbox server"**.
- When the network used is not in DHCP mode, please contact your network administrator and configure the **Sitrad INBOX** network parameters according to item 9.4 (Ethernet).

8.1.3 - Wi-Fi Mode :

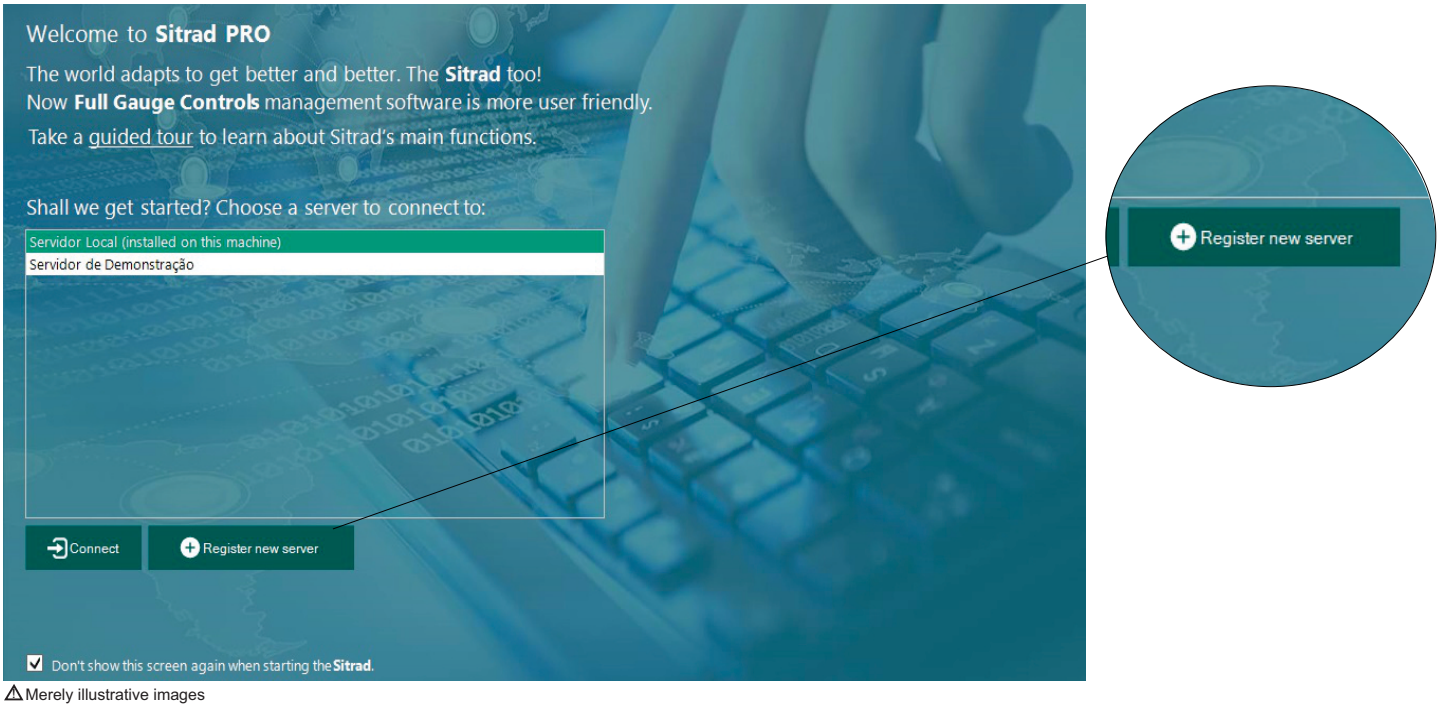
- On the **Sitrad INBOX** configuration screen, connect to an existing Wi-Fi network. Please check if this network has a computer with the **Sitrad** Pro software installed.

> ⚠**IMPORTANT:**
> **- The Ethernet Mode is independent of the others, and can be used in conjunction with Hotspot Mode or Wi-Fi Mode, but never with both simultaneously.**
> **- For remote connections, please contact your network administrator for network and external access settings.**

8.2 - Registering the server

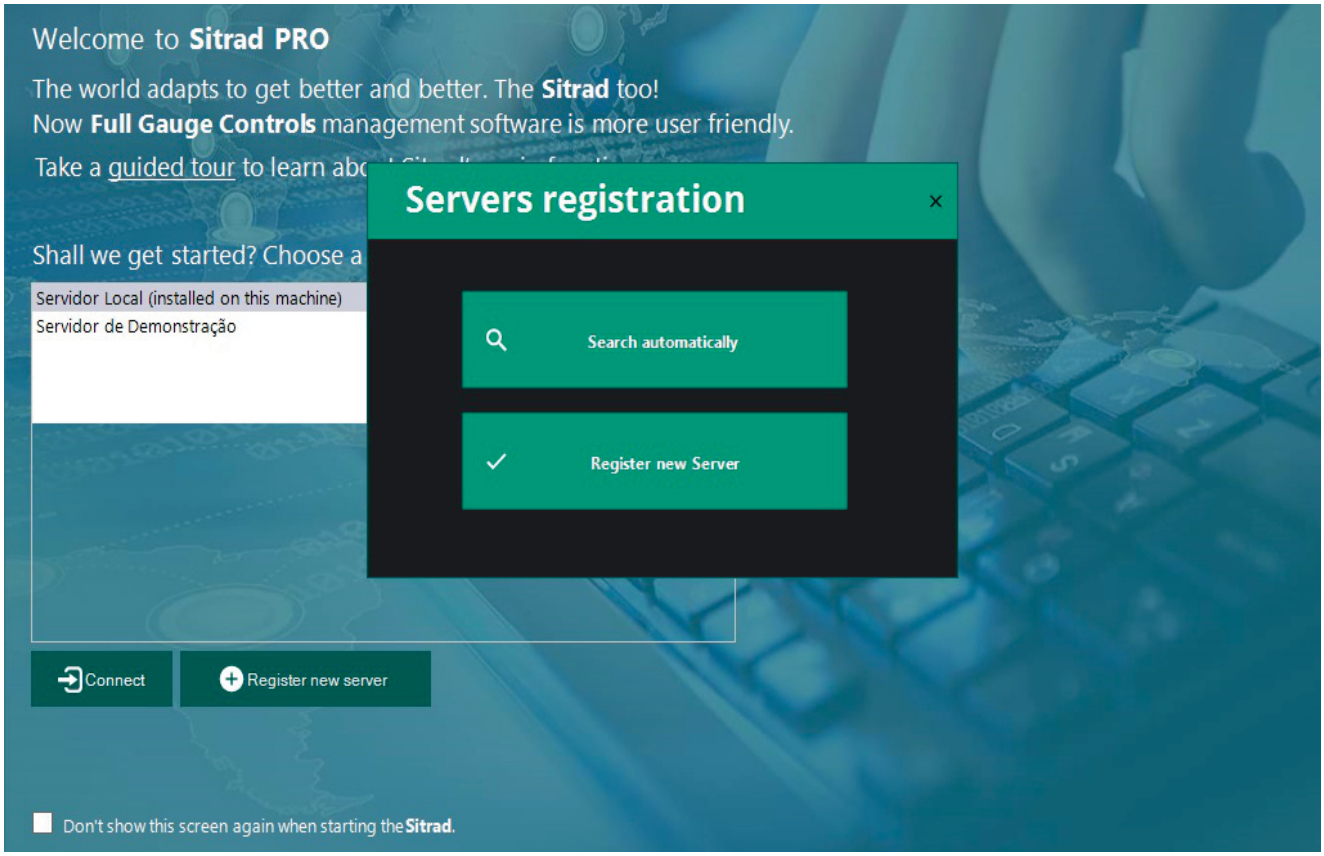
8.2.1 - For the three connection modes (**HOTSPOT, WI-FI** and **ETHERNET**), the registration of **Sitrad INBOX** as server is as follow:

8.2.2 - After connecting to the **Sitrad INBOX** network, open **Sitrad** Pro and select the option **''Register new server"**;



⚠Merely illustrative images

8.3 - Click **''Server registration''** to display the two server registration options. It is advisable that you use the **''Search automatically''** option, as the IP settings will be filled in automatically if the **Sitrad IN BOX** and **Sitrad** Pro are using the same network. For more advanced settings, use the ''Register new server'' option. In this case, you need to contact your network administrator to configure the IP settings.



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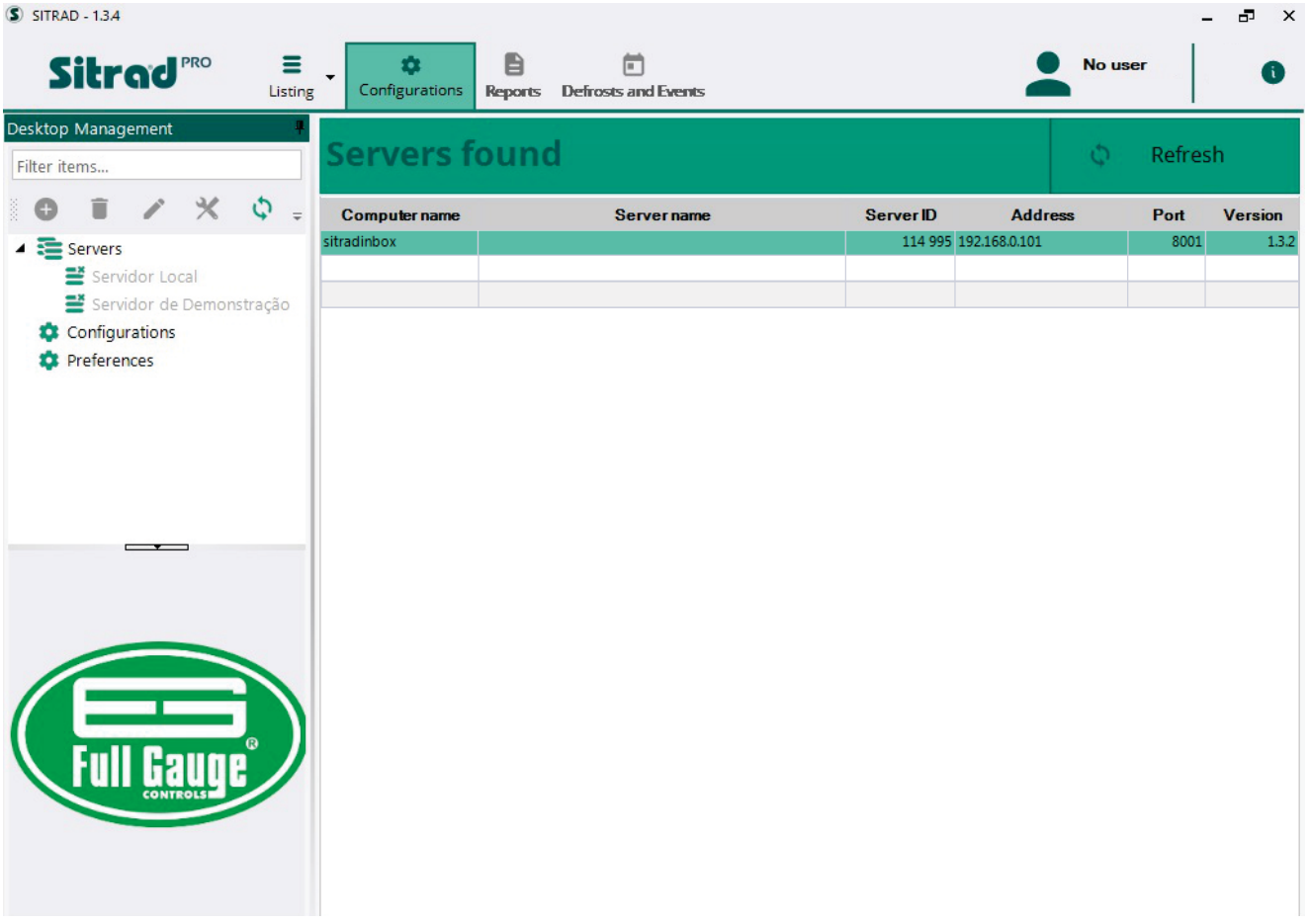
8.4 - After the automatic search the available servers on the network will be displayed. Double click to choose the **Sitrad IN BOX** server, as shown below.



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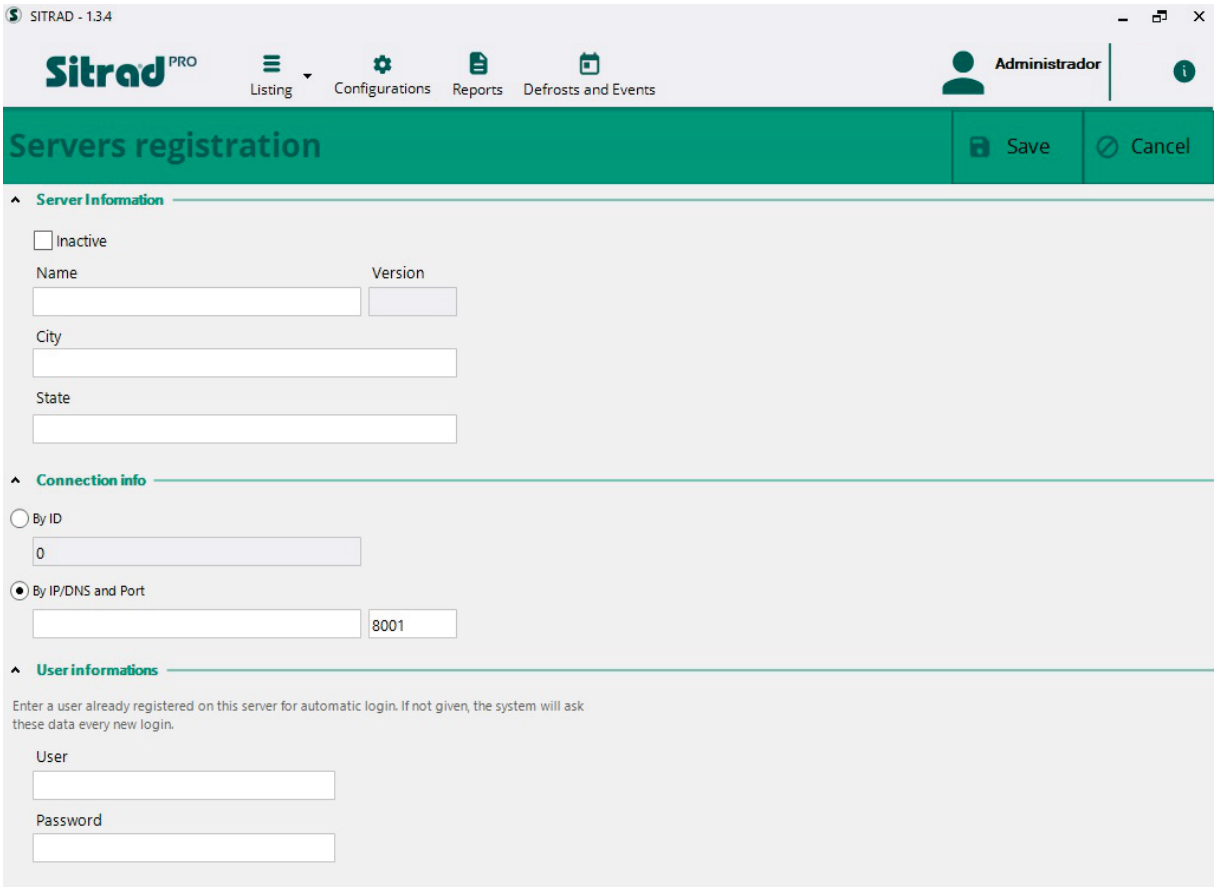
8.5 - A window to register the chosen server will appear. In the **''Name''** field, enter the chosen identification for your product. The **''IP Address''** will be filled in automatically (when it is an automatic search). Otherwise, the user should fill in this field with the IP address of the server he/she wants to be connected to. Fill in the **''City''** and **''State''** fields and use **admin** for the **''User''** and **''Password''** fields.



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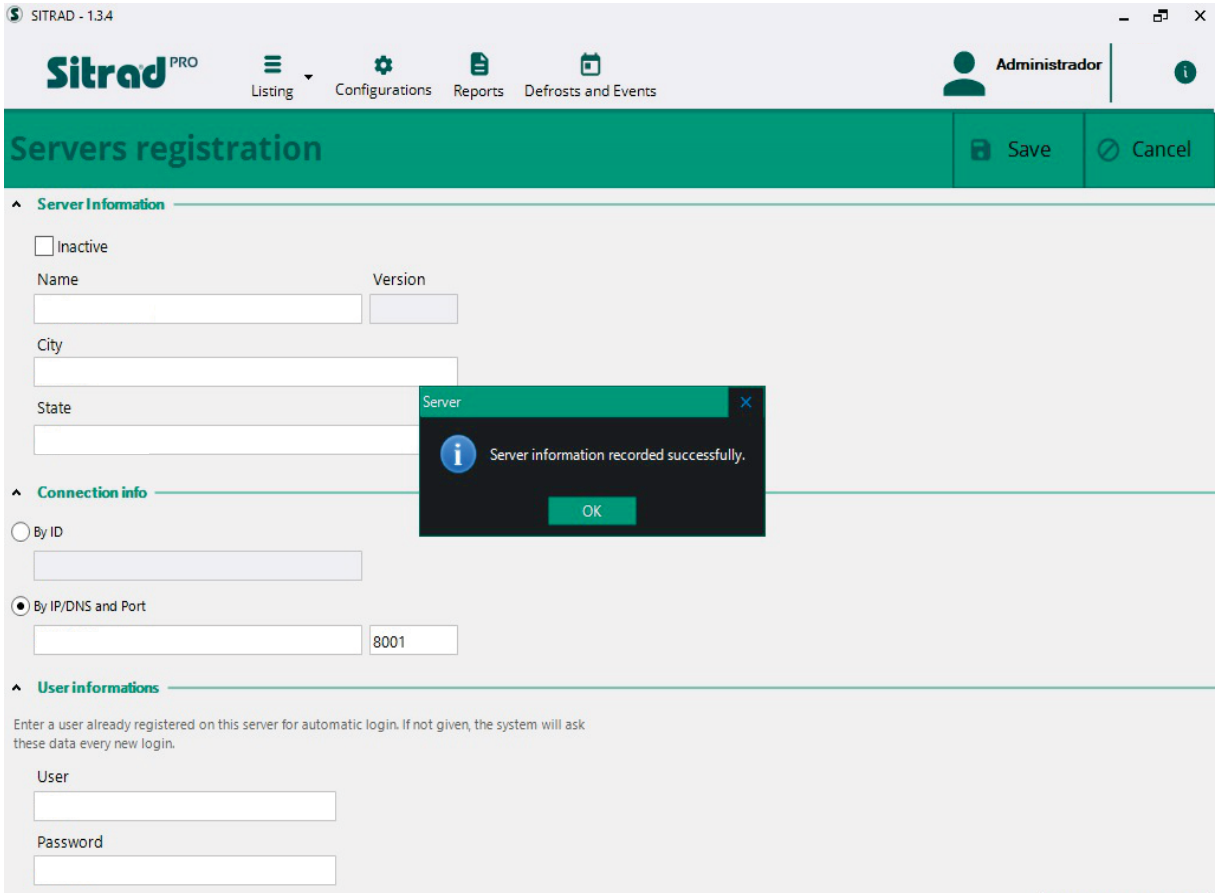
8.6 - After entering the data on **''Server registration''**, click **''Save''**.



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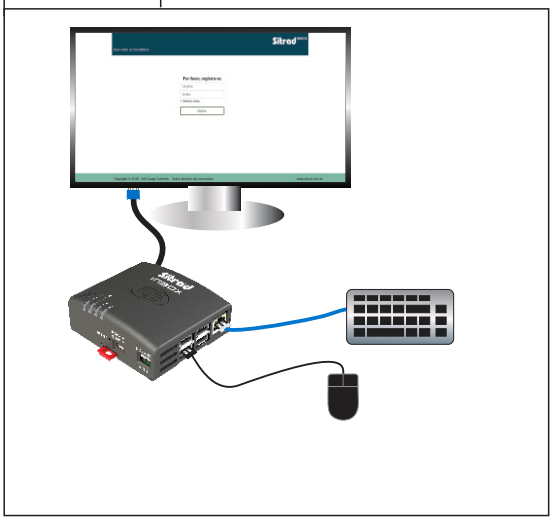
From this step on, the Sitrad iBOX server is already available in the Sitrad Pro software for connection, converter registration, and instrument registration.

9. SETTING UP THE SITRAD INBOX

9.1 - The **Sitrad INBOX** settings page can be accessed directly or remotely. It consists of an application for adjusting the system's general operating parameters. It allows users to change date and time, network parameters, data backup and system upgrades, among other features.

It can be accessed in three different ways:
1° - Directly : Using a monitor connected to the HDMI output;
2° - Wi-Fi Connection : Using a computer, tablet or smartphone with a browser (CHROME, MOZILLA FIREFOX, SAFARI, EDGE, etc.);
3° - Ethernet Connection : Using a computer with a browser (CHROME, MOZILLA FIREFOX, SAFARI, EDGE, etc.).

1° Directly

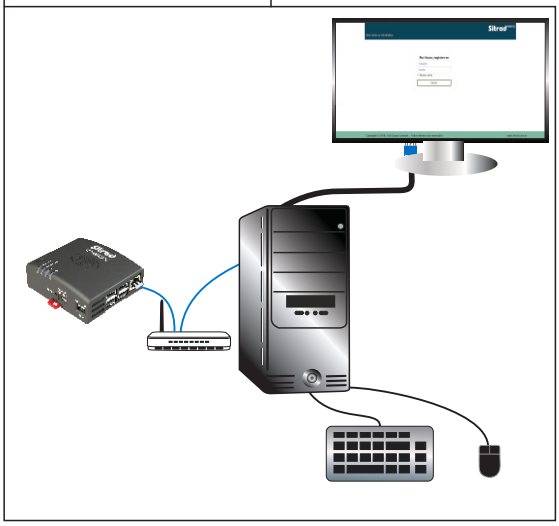


For direct access, a monitor, mouse and keyboard are required. Connect them following the example of the figure on the left. Turn on the **Sitrad INBOX** by pressing the **POWER** button. Wait for the program to start and the settings page will be displayed automatically.

2° Wi-Fi Connection

The **Sitrad INBOX** has the Hotspot mode enabled by default. This mode is required for the first setup.
From a mobile device, access the network settings and connect to **SitradinboxNet** using the **sitrad001** password (the network name and password settings can be modified later according to item 9.10).
Open a browser (CHROME, MOZILLA FIREFOX, SAFARI, EDGE, etc.) and enter **192.168.1.1** in the address bar.

3° Ethernet Connection



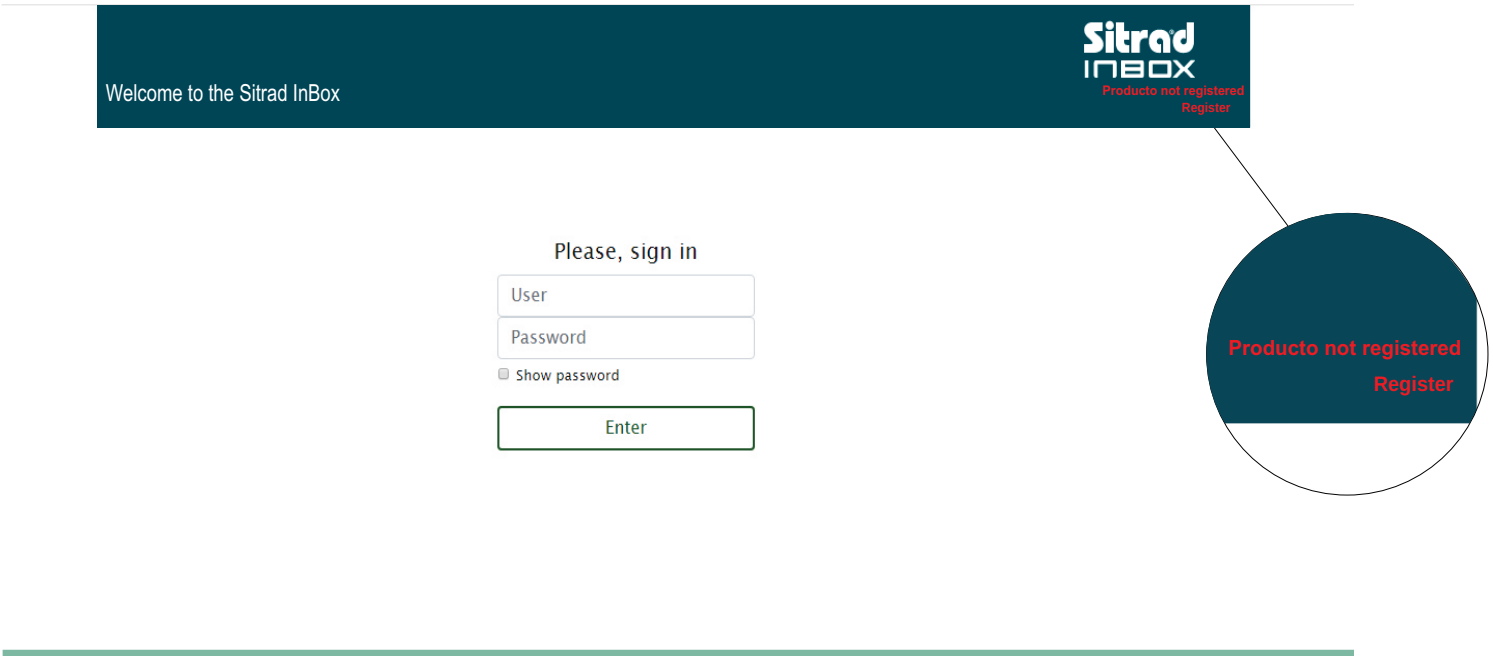
Connect the **Sitrad INBOX** to a router using an RJ-45 cable. Using a computer connected to the same network, open a browser (CHROME, MOZILLA FIREFOX, SAFARI, EDGE, etc.). Enter the IP assigned to the software in the address bar. To know the IP number, please contact your network administrator.

⚠**IMPORTANT: The Sitrad INBOX is factory set for wired network connections with dynamic routing (DHCP). To configure the connection to static routing networks, please contact your network administrator.**

⚠ **IMPORTANT: In order to configure the Sitrad INBOX make sure that it is powered up and that the system is in operation by checking the green LED (on).**

9.2 - To configure the Sitrad INBOX proceed as follows:
- Use **admin** for the user and password. After fill up these fields, click Enter.
- To improve the user experience, the Sitrad INBOX should be registered. To register your Sitrad INBOX product, click **"Register"** as shown below:

⚠ **IMPORTANT: The user must ensure that the computer that is registering the Sitrad INBOX is connected to the Internet.**



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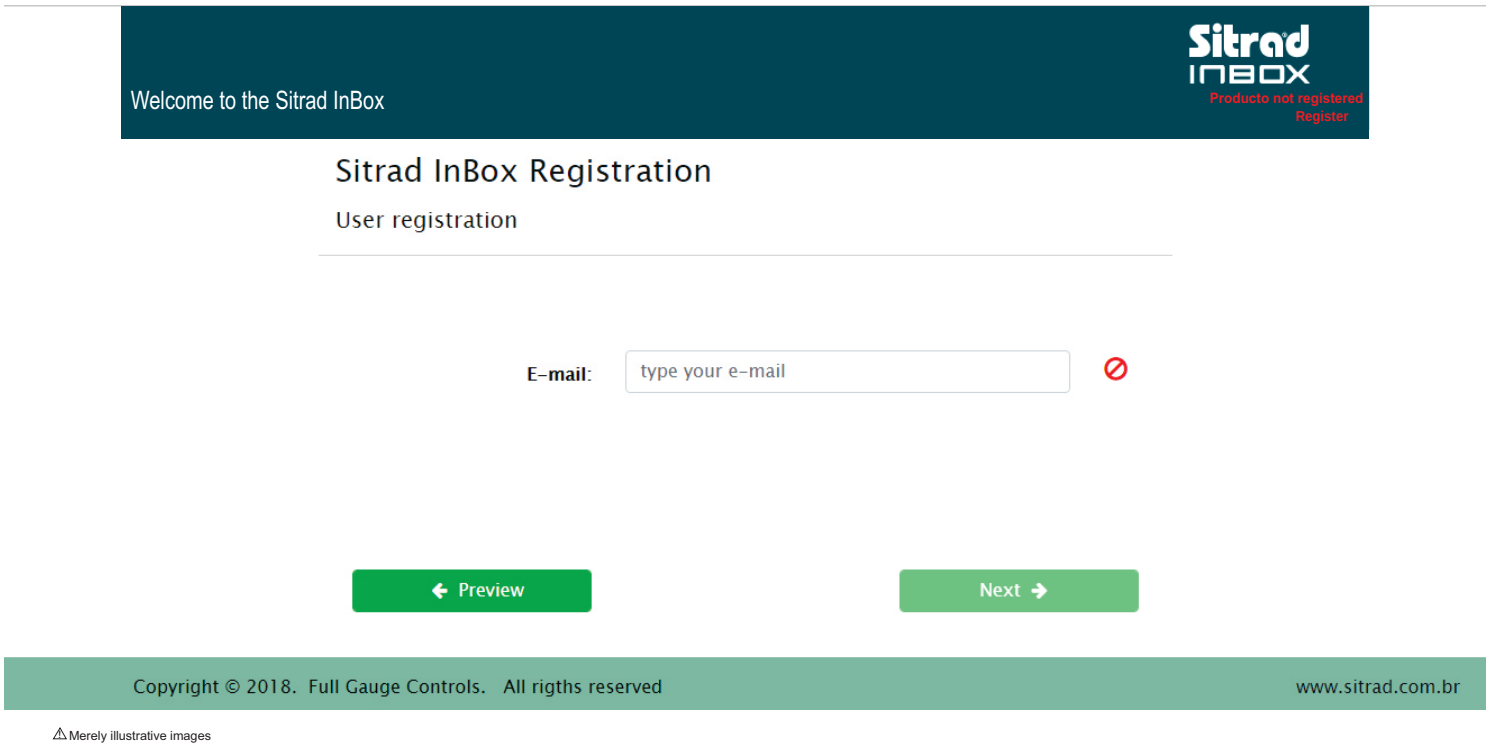
9.2.1 - The first step of the registration is to provide a valid email address and then click **"Next"**. If the provided email address has already been used, the data relating to this addresses registration will be loaded automatically.



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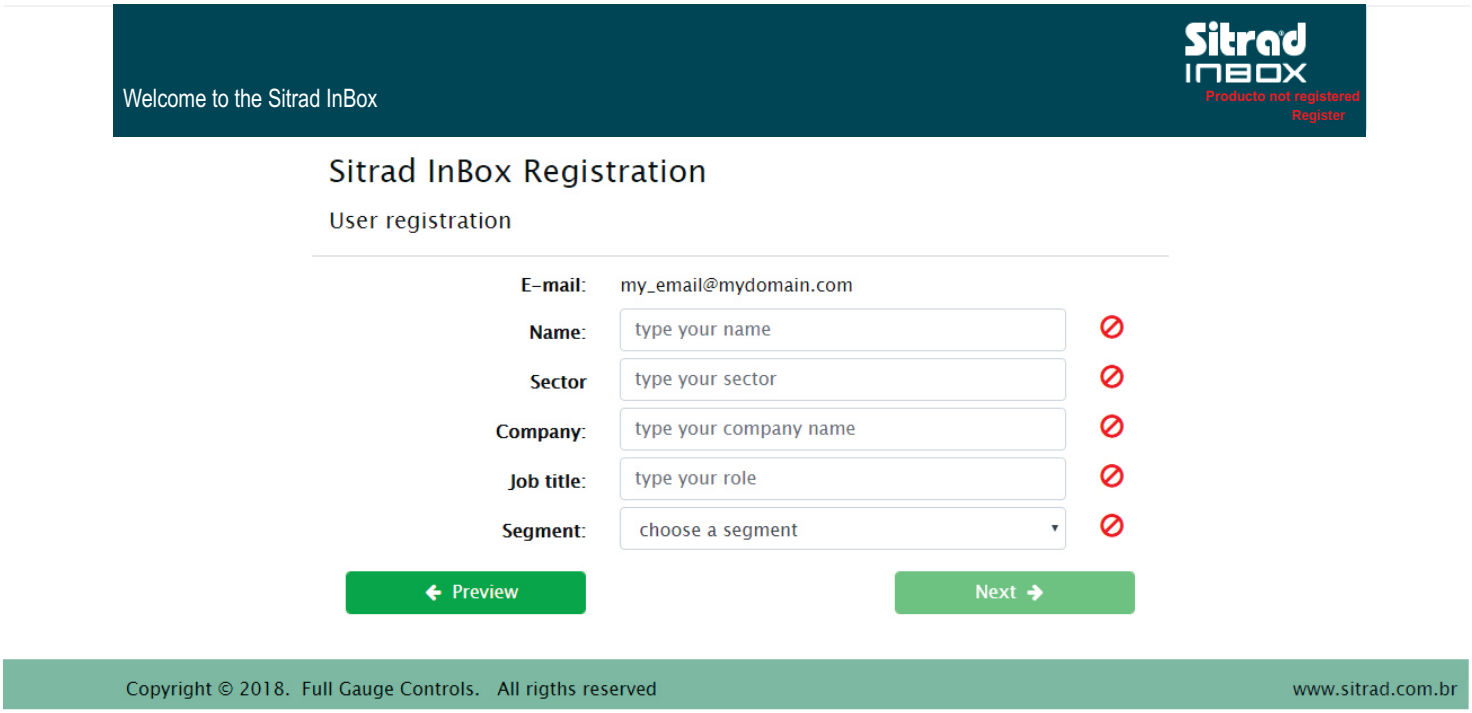
9.2.2 - If the user is not yet registered, they must fill in the fields with their current information. Click **''Next''**.



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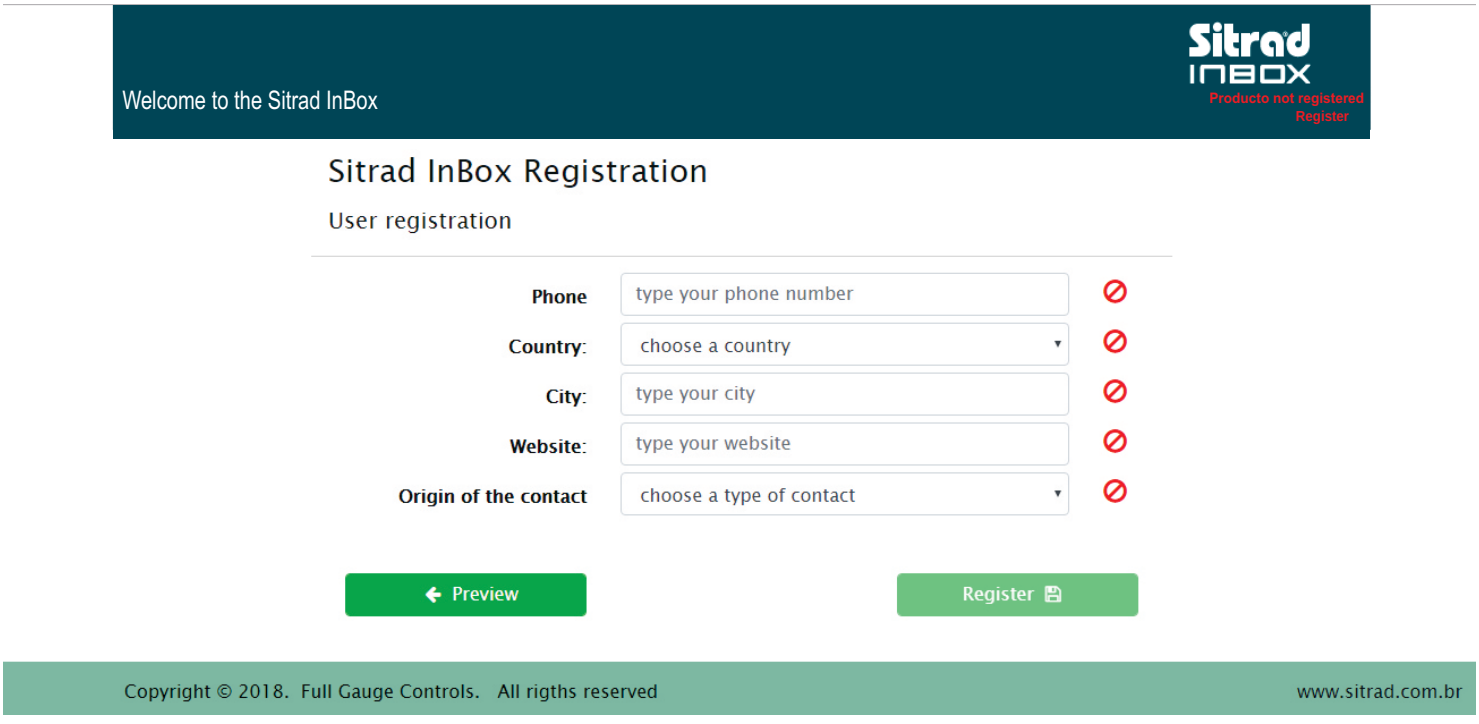
9.2.3- At the end of the process, click **''Register''**. The **''Next''** and **''Register''** buttons are available only if the data entered is valid.



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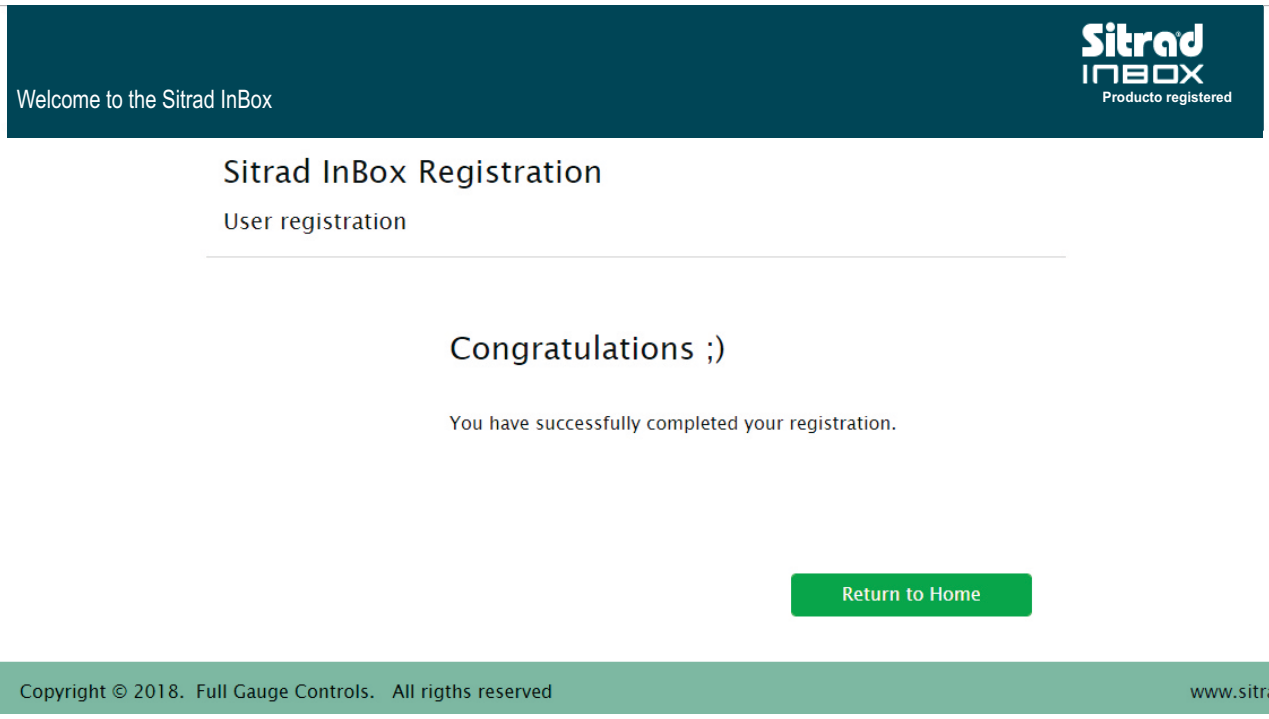
9.2.4- At the end of the process, the **''registration successful''** screen will be displayed.



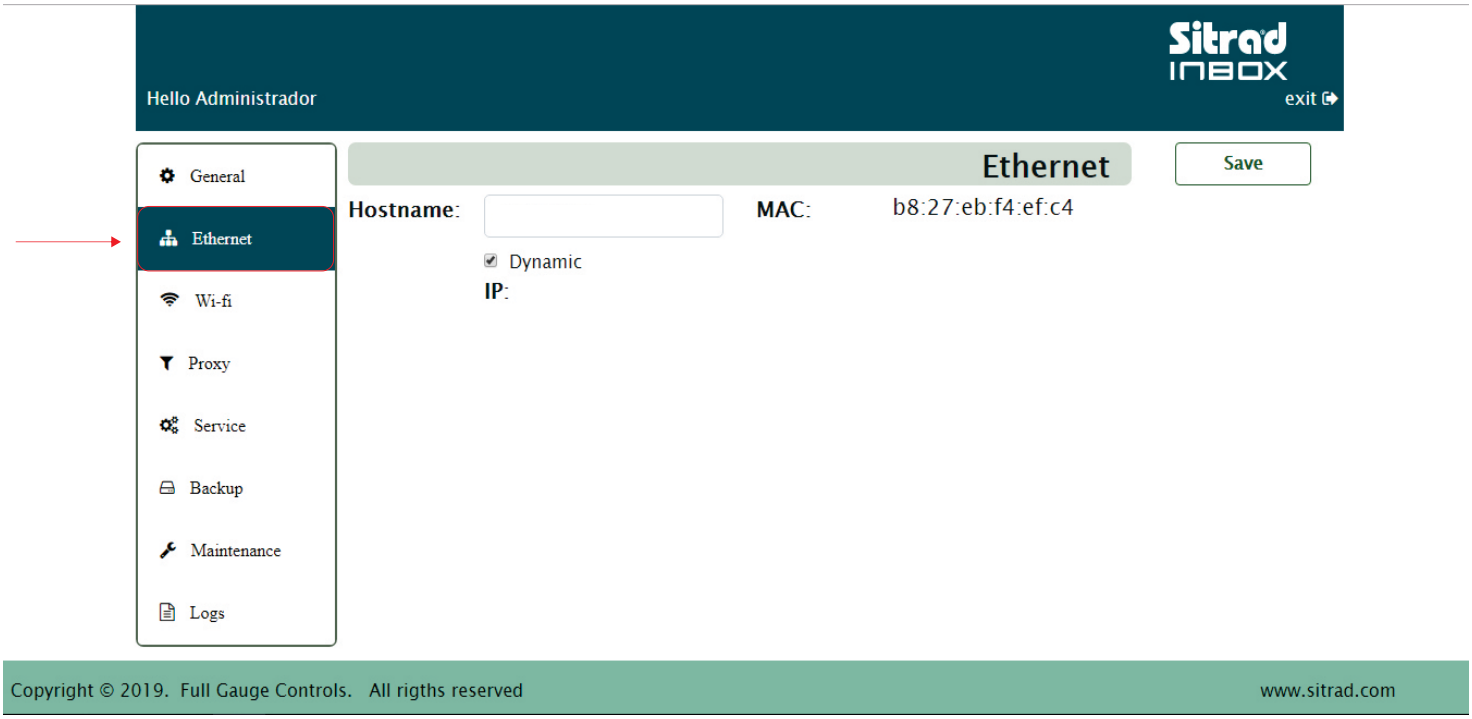
⚠ Merely illustrative images

⚠NOTE: Once registered, the Sitrad INBOX will display the message ''Product registered''. Unless the product is reset, it will not be possible to perform this operation again.

9.3 - On the ''General'' tab, you can configure the time zone where the **Sitrad INBOX** will be installed, as well as the operating system's keyboard and language settings. Date and time settings are also performed on this tab. Click Save.

⚠ Merely illustrative images

9.4 - On the **''Ethernet''** tab, you can configure the network parameters by choosing dynamic (DHCP) or static mode. In the dynamic mode, the Sitrad INBOX automatically obtains the network settings if the network is configured to provide IP through the DHCP protocol. To configure the static mode, please contact your network administrator. Click Save.



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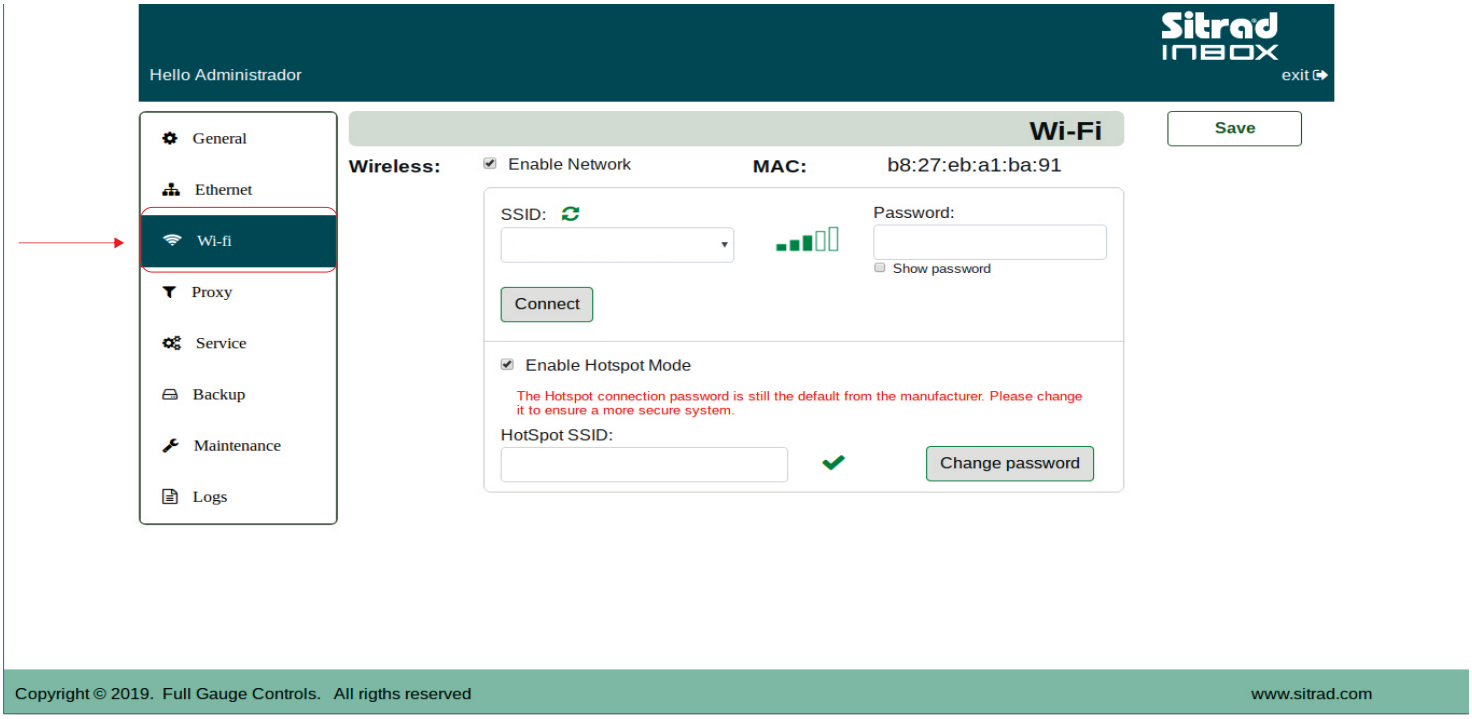
9.5 - On the **''Wi-Fi''** tab, the user can define the connection's mode of operation in the Sitrad INBOX. By clicking on ''Enable Hotspot Mode'', the program provides a wireless network structure for other devices to connect to it. Otherwise, the user must connect to a network of their preference, which can be selected in the SSID field. The user can also disable the two modes of operation - Wi-Fi and Hotspot - by unchecking the ''Enable Network'' item. Click Save.



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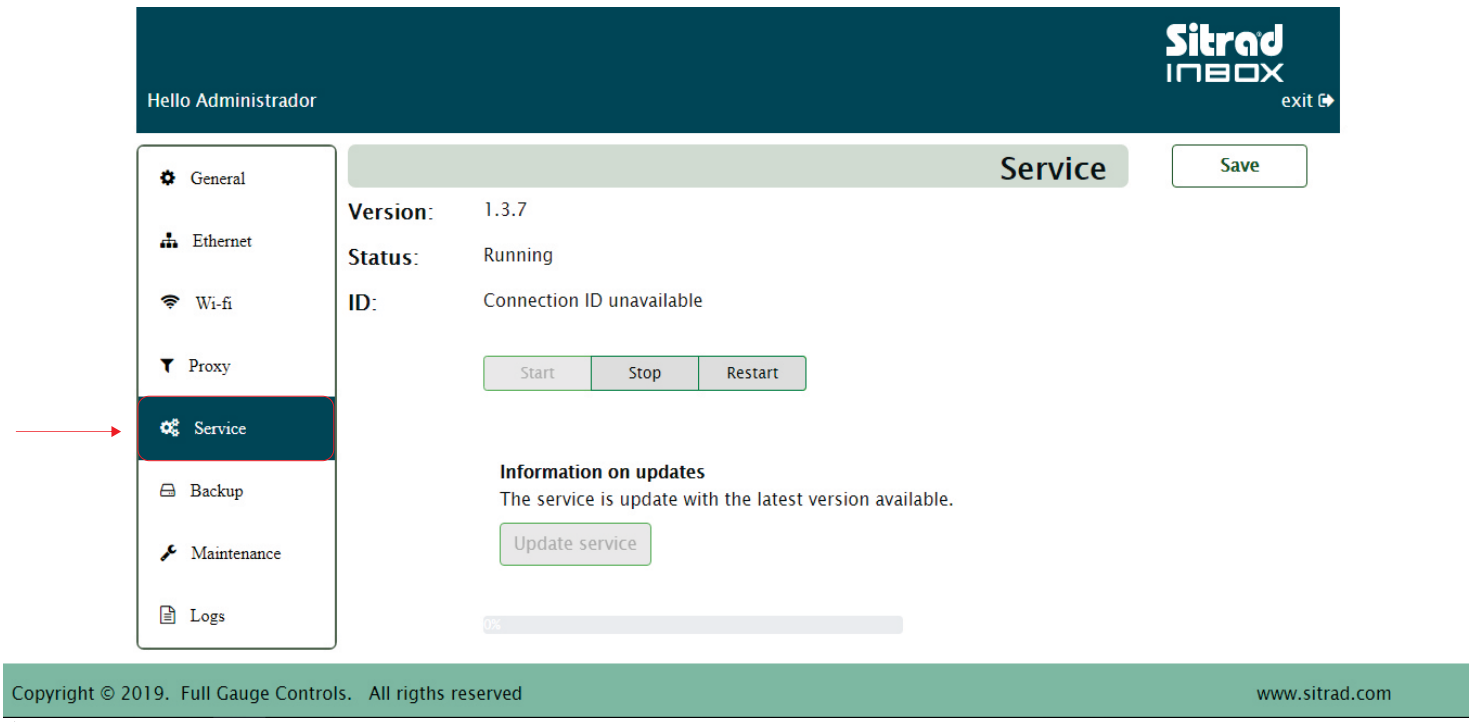
⚠ **IMPORTANT: For security reasons, the Sitrad INBOX suggests that the user to change the default password of access to the Hotspot.**

9.6 - The **"Proxy"** settings are required for networks that uses a Proxy server for Internet access, as the **Sitrad INBOX** automatically adjusts the date and time and searches for software updates online. **These settings must be made by the user's network administrator**. Click Save.

⚠ Merely illustrative images

9.7 - The **"Service"** is an application responsible for storing and making available the data provided by the controllers (Full Gauge) to **Sitrad** Pro.
In this tab, it is possible to perform the management by stopping or restarting it as necessary. The user can also view information on available software updates. Click Save.

⚠ **IMPORTANT: Information regarding the update, as well as the actual execution of the update are only possible if the Sitrad INBOX is connected to the Internet. For advanced Internet access settings, such as a Proxy connection, please contact your network administrator.**



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9.8- On the **"Backup"** tab, users can create a backup copy of the service database by clicking Create Backup. Preferentially, the backup created should be stored on removable memory devices (USB flash drive, external HDD, etc.). If there is more than one device connected, the program will switch to the one with the most available memory;

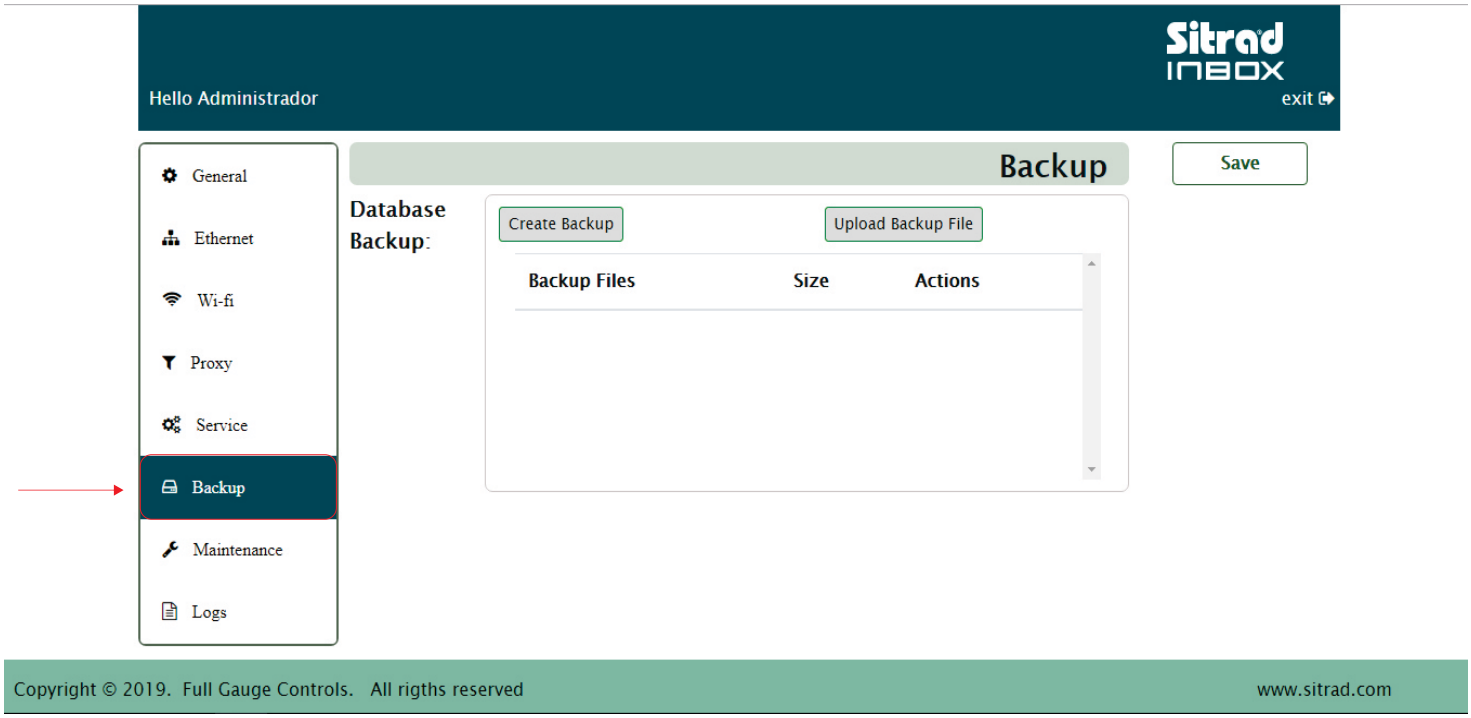
- If there is no device connected, the **Sitrad INBOX** will store the copy in its internal memory. For security reasons, please download this file by clicking on the download icon. The file will be automatically transferred from the **Sitrad INBOX** to the computer that is performing the remote access. When access is made directly to the **Sitrad INBOX** using the monitor, the download and upload actions will not be available.

- Subsequently, backup files downloaded to other computers can be reloaded and re-stored in the **Sitrad INBOX** following the same storage preference criterion as for backup creation. To do this, click "Load Backup" and specify the file that is to be uploaded;

- Data recovery is carried out by **Sitrad INBOX** from the backup files listed on the screen below. Each file can be restored by clicking on its corresponding action icon ;

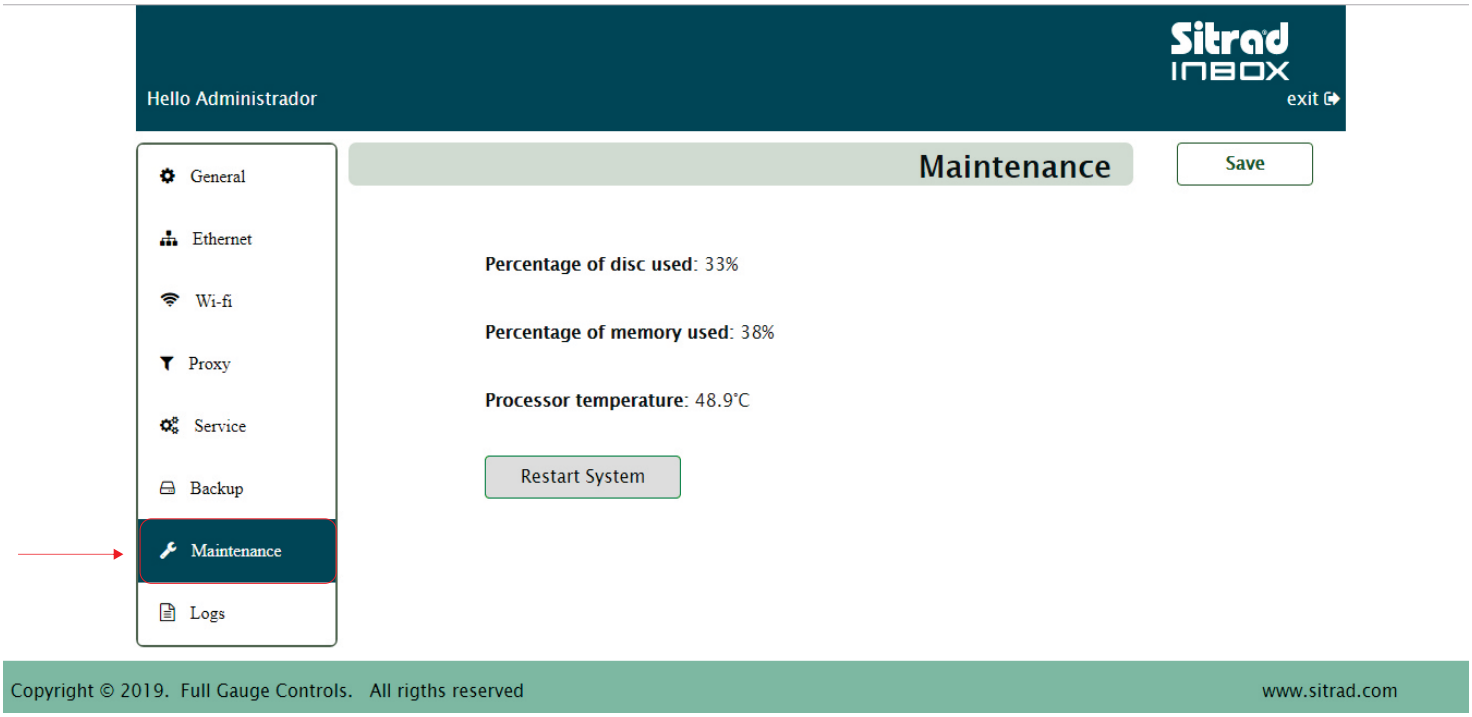
- Backup files can be discarded by clicking the corresponding action icon . Click Save.

⚠ **IMPORTANT: A good backup execution practice is the use of a removable memory device, which eliminates the need to download and upload files, as these can be safely removed and stored in other locations.**



⚠ Merely illustrative images

9.9 - The maintenance screen indicates the total percentage of memory used by Sitrad INBOX and gives the user the option to restart the Sitrad INBOX.



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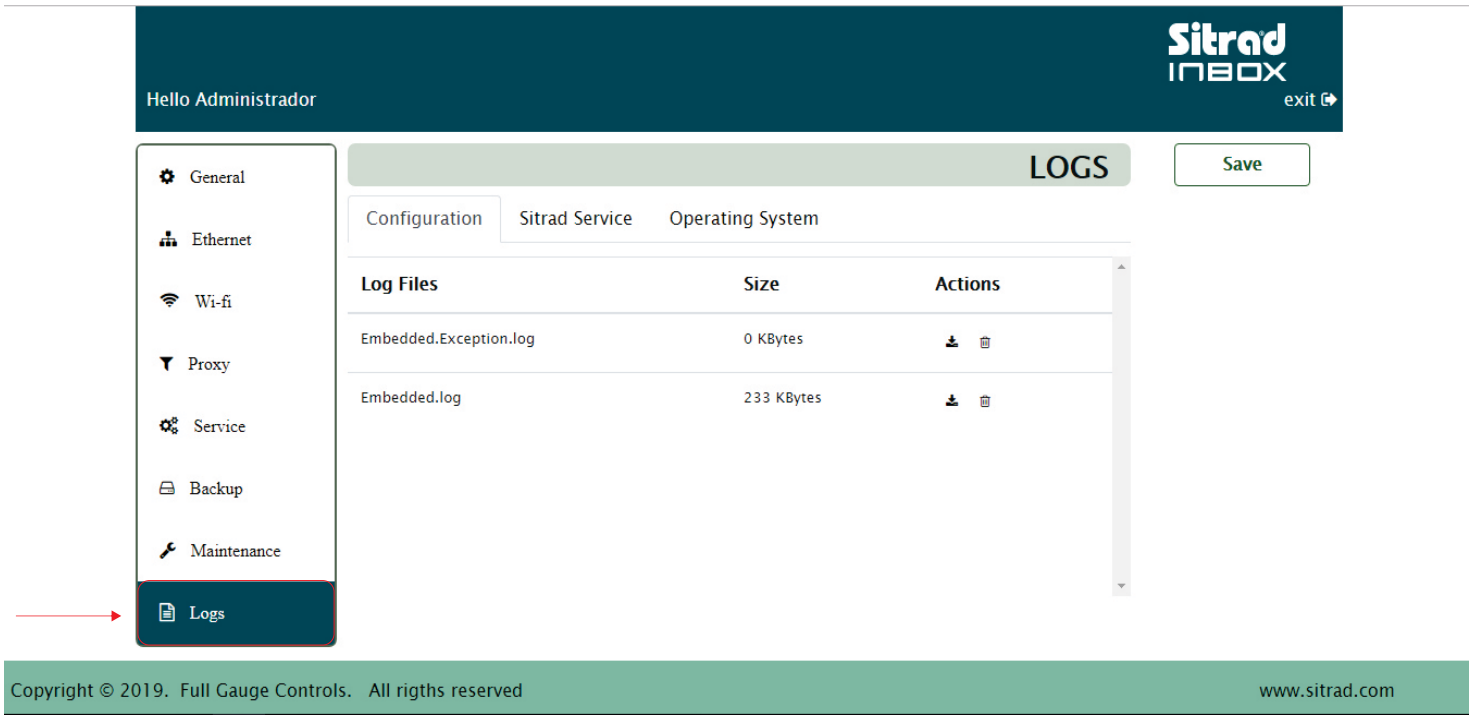
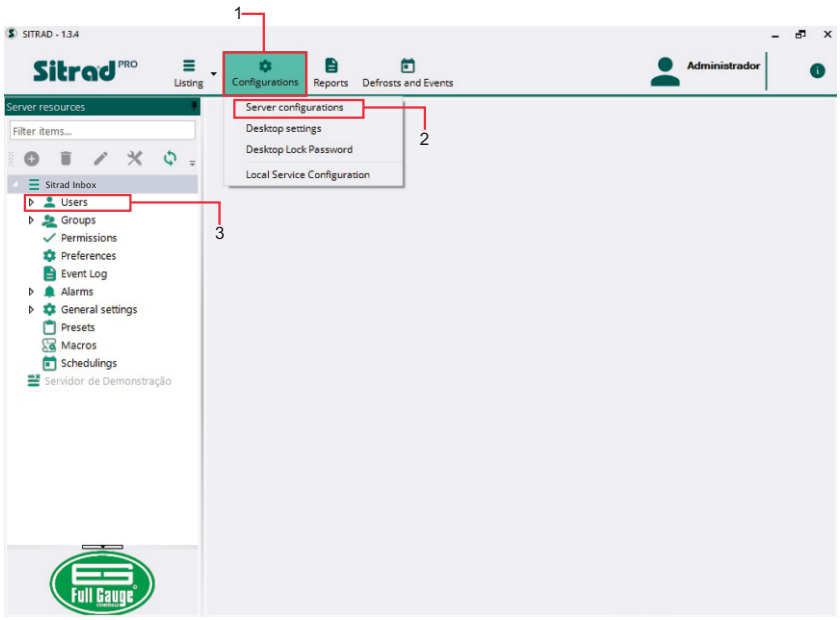
9.10 - In the **''Logs''** screen the user has access to the files where all the actions within the system are registered. Divided by tabs: Configuration, Sitrad Service and Operating System.
- **Configuration:** The Log files contained in this tab refer to the actions taken from the configuration page. Example: date and time changes, language setting, etc.
- **Sitrad Service:** The Log files contained in this tab refer to the actions taken by the Sitras Service software. Example: user creation, register of converters and instruments, etc.
- **Operating System:** The Log files contained in this tab refer to the actions taken within the operating system in general. Example: errors in internet connections, startup and shutdown of the Sitrad Service, etc.

Note.: For all the files contained in this tab you can download or delete them.



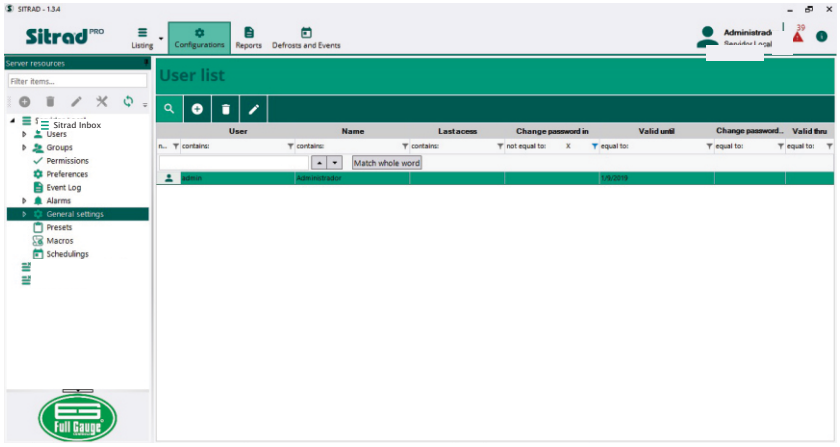
⚠ Merely illustrative images

9.11 - To change the user and password, open **Sitrad** Pro and connect to the **Sitrad INBOX** server. Select the **Sitrad INBOX** in the server tree, click Settings ⟶ Server settings ⟶ Users.



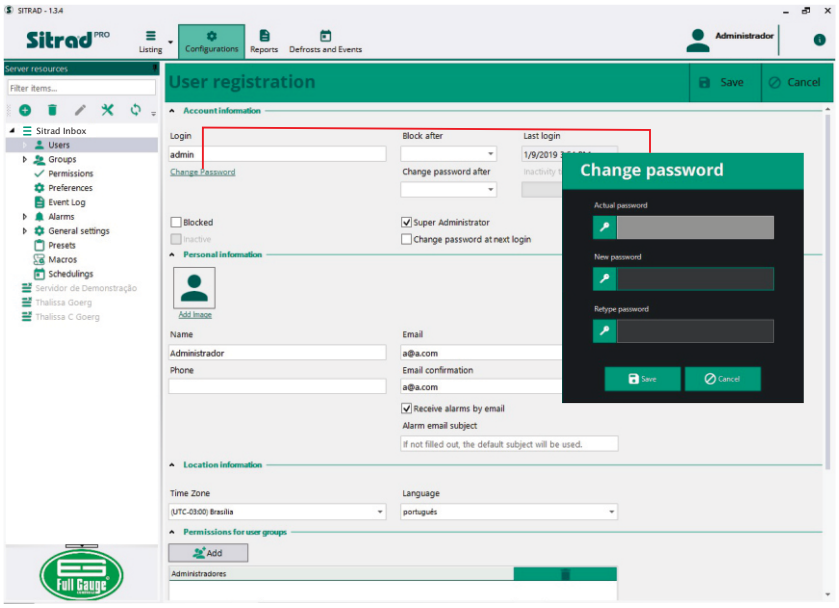
⚠Merely illustrative images

9.11.1 - Click the **''Users''** field to display the user list screen. This screen allows users to search, add, edit and delete users. Only users with Super admin privileges can access the **Sitrad INBOX** settings page.



⚠Merely illustrative images

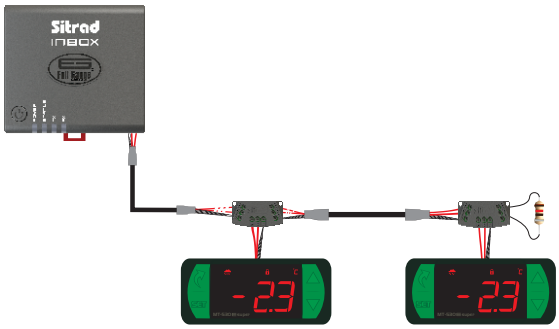
9.11.2 - Click **''Edit User''**. The fields shown below will be displayed. Users (Super admin) are able to change the login and password that will be used in **Sitrad INBOX**. Click ''Save''.



⚠Merely illustrative images

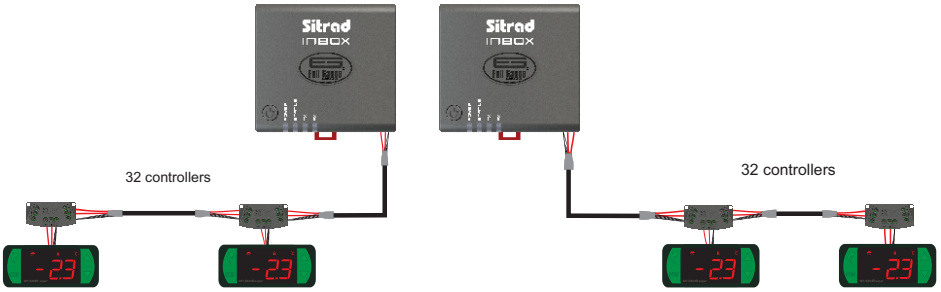
10. INTERCONNECTING CONTROLLERS AND SITRAD INBOX

⚠ Merely illustrative images

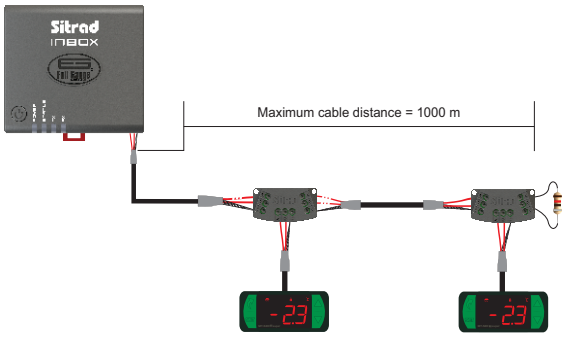


10.1 FOR A ROBUST ELECTRICAL INSTALLATION, OBSERVE THE FOLLOWING RECOMMENDATIONS:

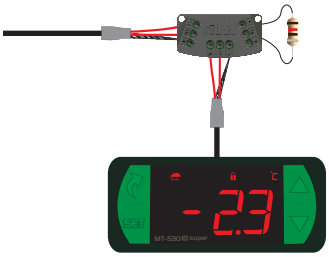
- Use a 2-way cable, minimum 24 AWG;
- Preferably, use cables with mesh shielding to protect the communication line from outside interference;
- Avoid splicing the cable;
- Use terminal blocks to connect controllers. Besides facilitating the connection, they have a protection feature;
- Avoid connections longer than 2 meters between the connection block and the controller;
- Use a maximum of **32 devices** connected to each Interface.



- Size networks with maximum length of **1000 meters** between the Interface and the last controller.

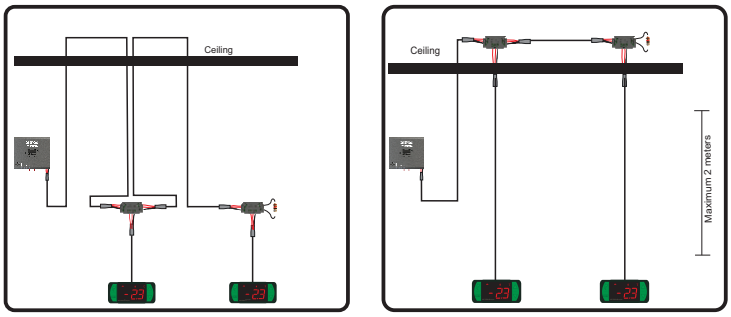


- Connect a 120 ohm terminating resistor between terminals **A** and **B** of the terminal block at the end of the line when using a cable length greater than **100 meters**.



10.2 RECOMMENDED TOPOLOGIES:

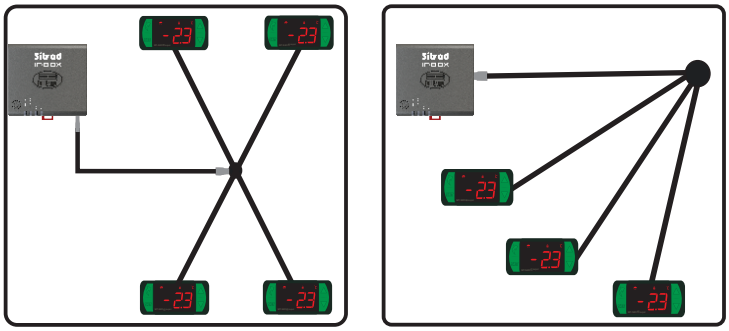
- Use one of the following arrangements to create a well-defined path



CORRECT

10.3 TOPOLOGIES NOT RECOMMENDED

- Avoid creating long network branches.

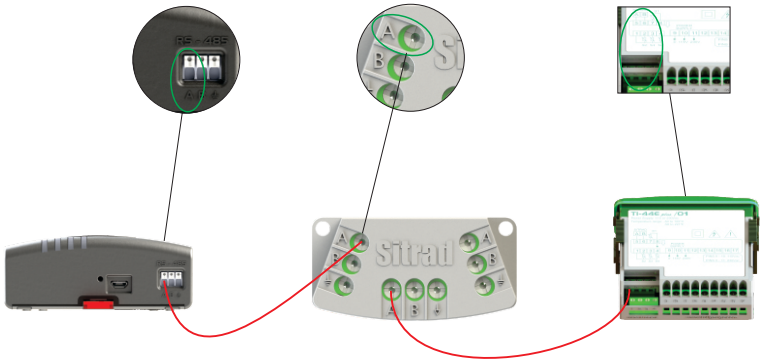


INCORRECT

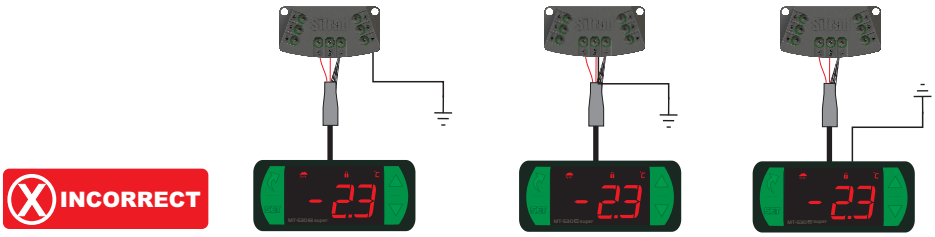
10.4 CONNECTION BLOCK FOR SERIAL COMMUNICATION

Sold separately

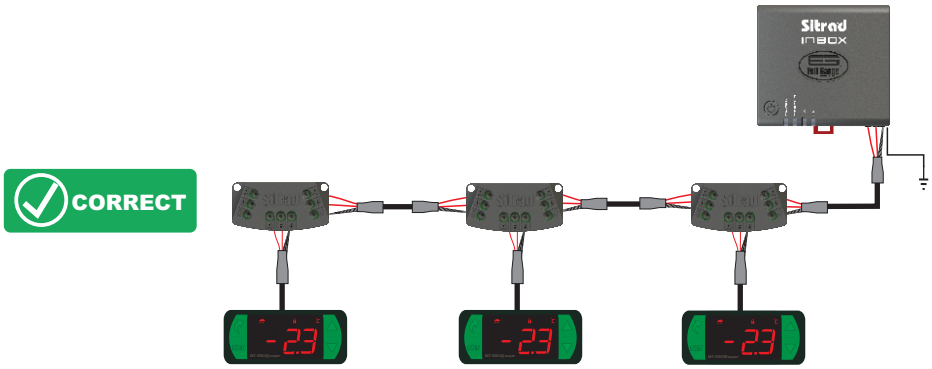
Used to interconnect more than one instrument to the interface. The wires must be connected as follows: Terminal A of the controller connects to terminal A of the connection block, which in turn must be connected to terminal A of the interface. Repeat the procedure for terminals B an ⏚, with ⏚ being the cable mesh.
The terminal ⏚ of the connection block must be connected to each controller's respective terminals ⏚.



- Do not ground the controllers separately.

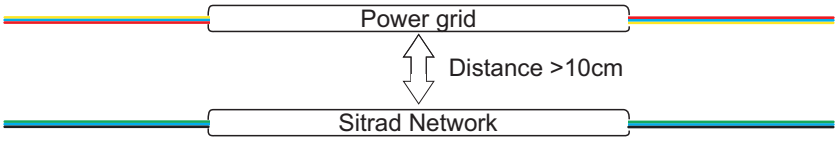


- Ground the cable shield at one point only, preferably near the interface.



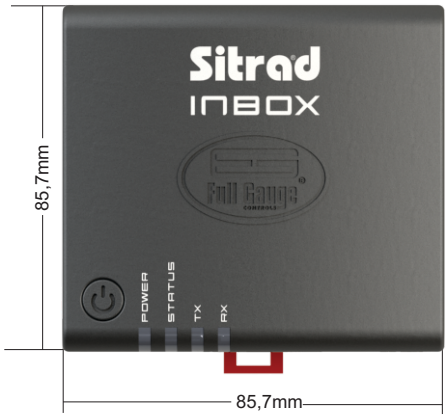
10.5 IMPORTANT

According to chapters of NBR 5410 standard:
1. Install surge protectors on the power line.
2. Serial communication and sensor cables can be installed together, but not in the same conduit where power supply and load drive cables are installed.

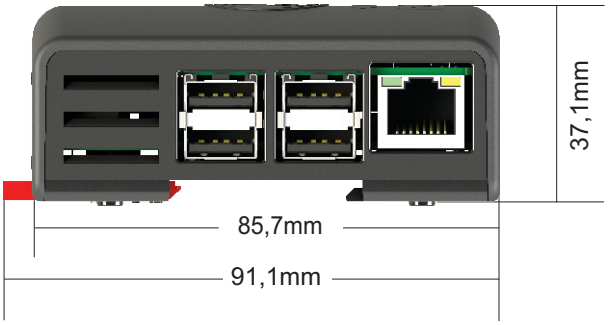


11. ANNEXES - REFERENCE IMAGES

Top view



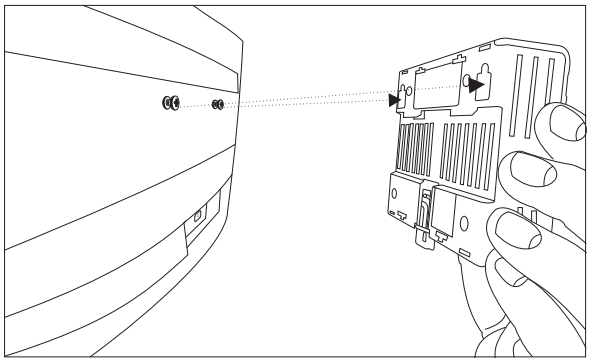
Rear view



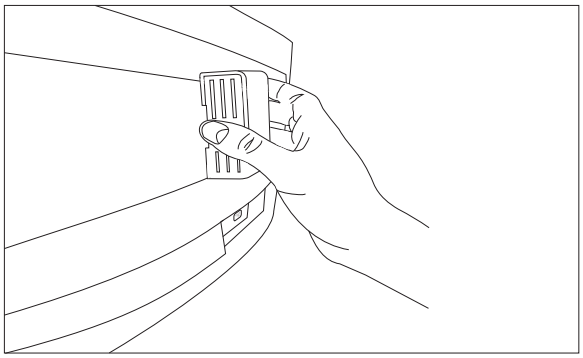
12. INTERFACE INSTALLATION

12.1 FASTENING WITH SCREWS

12.1.1 - To attach the interface next to the monitor or to the wall, use the VESA fastening system with a 75 mm dimension. The screw used must be: M4 cylindrical head (slotted or Philips) at least 8 mm long.

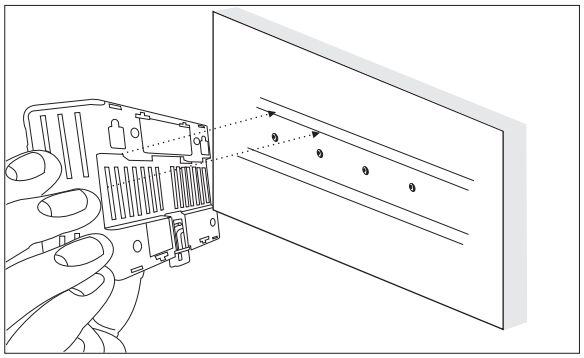


12.1.2 - After positioning the interface, push it down to secure it.

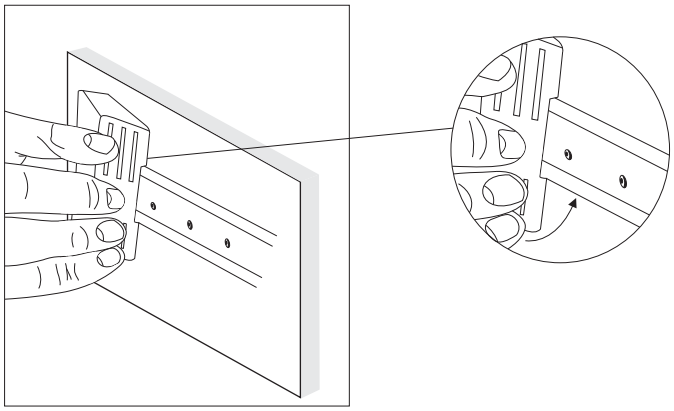


12.2 FASTENING BY DIN RAIL

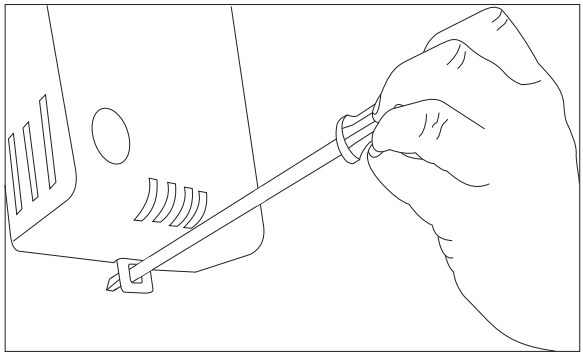
12.2.1 - To attach the interface to a DIN Rail, position the interface according to the picture and insert the top.



12.2.2 - Then, insert the bottom and check if the lock is blocked.



12.2.3 - To remove the interface from the DIN Rail, use a wrench compatible with the size of the lock as a lever.



13. WARRANTY

ENVIROMENTAL INFORMATION

Packaging:

Materials used in the packaging of Full Gauge products are 100% recyclable.
Be sure to dispose them using specialized recycling facilities.

Product:

The components used in the Full Gauge controllers may be recycled and reused if disassembled by specialized companies.

Disposal:

Do not incinerate or dispose the controllers that have reached the end of their service life in household waste. Be sure to comply with the existing legislation in your area relating to disposal of electronic waste. In case of doubt, please contact Full Gauge Controls.

WARRANTY - FULL GAUGE CONTROLS

As of May 2005, products manufactured by Full Gauge Controls have a two (2) year warranty directly with the factory and one (1) year before the reseller network, counted as of the date of consigned sale as stated on the invoice. After this said year before the reseller network, the warranty shall continue to be valid if the instrument is sent directly to Full Gauge Controls. The products are warranted in case of defects in workmanship, making them unsuitable or inadequate for their intended applications. The warranty is limited to the maintenance of instruments manufactured by Full Gauge Controls, disregarding other kinds of expenses, such as indemnity for damages caused to other equipment.

WARRANTY EXCEPTIONS

The Warranty does not cover expenses incurred for freight and/or insurance for sending the products with signs of defect or malfunctioning to the provider of technical support services. The following events are also excluded from the warranty: natural wear and tear of parts, external damages caused by falls or inadequate packaging of products.

WARRANTY INVALIDATION

The product warranty shall automatically lose validity, if:

- The instructions for use and assembly contained in the technical description and the installation procedures described in Standard NBR5410 are not followed;
- The product is submitted to conditions beyond the limits specified in its technical description;
- The product is violated or repaired by a person not pertaining to the Full Gauge technical team;
- The damages are due to a fall, blow and/or impact, water damage, overload and/or atmospheric discharge.

USE OF WARRANTY

To use the warranty, the customer should send Full Gauge Controls the product adequately packaged, along with the respective purchase Invoice. The customer will bear the freight cost for shipment of the products. Also, as much information as possible regarding the observed defect should be sent, in order to facilitate the analysis, testing and service performance.

These processes and any product maintenance shall only be performed by the Technical Support Services of Full Gauge Controls at the Company headquarters - Rua Júlio de Castilhos,250 - Zip Code 92120-030 - Canoas - Rio Grande do Sul - Brazil