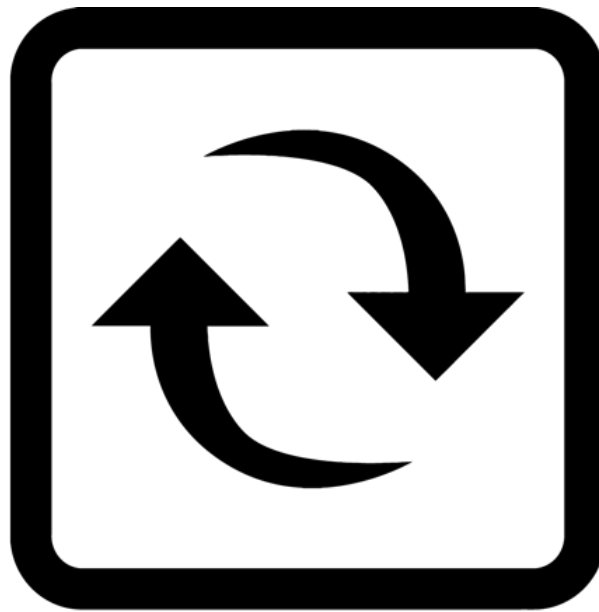


SENSORS PLATFORM USER MANUAL



INFRASENSING

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Disclaimers:

This sensor is **not water-resistant**. Exposure to water, condensation or any form of liquid ingress can result in **malfunction, inaccurate readings, permanent damage, and voiding the warranty**.

Non-condensing operation (definition).

The sensor must operate only in non-condensing atmospheres. Non-condensing means the ambient dew point stays at least 5°C below the coldest accessible part of the device.

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Revision # 108 - Sensors Platform

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For UL compliant use we refer to the UL compliancy guide available on http://manuals.infrasensing.com/UL_Compliancy_Guide_v1.pdf

Warranty:

For the warranty on this product please visit

<https://infrasensing.com/>

OPENING BASE UNIT, ADDON, EXPANSION HUB, SENSOR OR ANY OTHER HARDWARE VOIDS THE WARRANTY

Certifications:



The InfraSensing sensors are FCC (Class A) & CE (Class B) certified. Certificates can be downloaded from <https://infrasensing.com/sensors>

Commissioning Requirements

Testing and Verification: Before deploying any InfraSensing sensors into production, it is the responsibility of the customer to rigorously test each sensor during the commissioning phase. This is to ascertain and confirm the proper and accurate operation of the sensors, to ensure the integrity of data communication pathways, and to verify that alert mechanisms are configured and functioning correctly.

Gas Sensor Bump Testing: For all gas sensors provided by InfraSensing, a mandatory bump test shall be conducted during the commissioning phase. Bump testing is a quick check to confirm the sensor's responsiveness. It involves exposing the sensor to a known concentration of test gas and verifying the sensor's response.

Annual Review: In accordance with applicable code requirements, gas sensors shall be subjected to periodic bump testing at a minimum frequency of once annually. The customer is responsible for scheduling and ensuring this testing takes place and for maintaining accurate records of each test conducted.

Safety precautions

Caution

For safety reasons, the Base Units (base units), add-ons, expansion hubs and sensor probes may never be moved, disconnected, connected fully or partially covered while operating. Disconnect any power supply before performing installation or maintenance work.

Danger

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH FOR POWER SENSORS OR SENSORS IN ELECTRICAL ENVIRONMENTS

Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. In the USA, see NFPA 70E.

Only qualified electrical workers should install electrical equipment like our power sensors. Such work should be performed only after reading this entire set of instructions.

NEVER install if something is not clear.

NEVER work alone.

Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power. Assume that all circuits are live until they have been completely de-energized, tested, and tagged.

Turn off all power supplying the power sensors and the equipment (such as base units) in which it is installed before working on it.

Always use a properly rated voltage sensing device to confirm that all power is off.

The successful operation of this equipment depends upon proper handling, installation, and operation. Neglecting fundamental installation requirements may lead to personal injury as well as damage to electrical equipment or other property.

NEVER bypass external fusing.

Before performing testing on any equipment in which the power sensors are installed, disconnect all input and output wires to the power meter. High voltage testing may damage electronic components contained in the electronics.

The power sensors should be installed in a suitable electrical enclosure.

Failure to follow the above instructions may result in damage of the equipment, serious personal injury or death.

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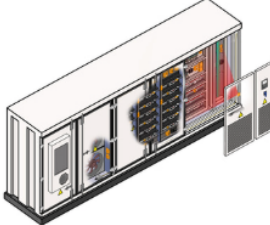
1 InfraSensing Overview

1.1 Overview of InfraSensing Product Lines

InfraSensing delivers advanced monitoring solutions designed to safeguard mission-critical infrastructure by enhancing reliability, safety, and performance. Built on a modular and open sensor platform, InfraSensing's portfolio addresses diverse environments and challenges—from Prevent-iON® for early detection and prevention of lithium-ion battery failures, to SwitchMon® for continuous monitoring of switchgear and critical power systems, and ServersCheck® for comprehensive oversight of data centers and IT rooms. Together, these solutions provide organizations with the tools they need to proactively manage risks, ensure operational continuity, and protect their most valuable assets. <https://infrasensing.com/>

Prevent-iON®

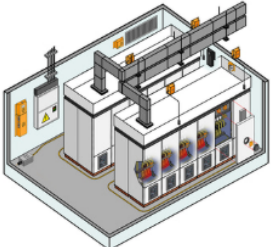
Protecting li-ion batteries with abuse, off-gas & thermal runaway monitoring



[Learn more](#)

SwitchMon®

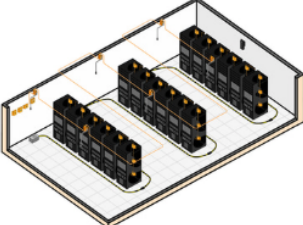
Continuous thermography (CTM), condition (CCM) & environment (CEM) monitoring for switchgear & critical power



[Learn more](#)

ServersCheck®

Complete monitoring for Tier 3 & 4 white space, modular data centers & IT rooms



[Learn more](#)

Prevent-iON® –

Protects lithium-ion batteries with advanced monitoring for abuse, off-gas, and thermal runaway.

SwitchMon® –

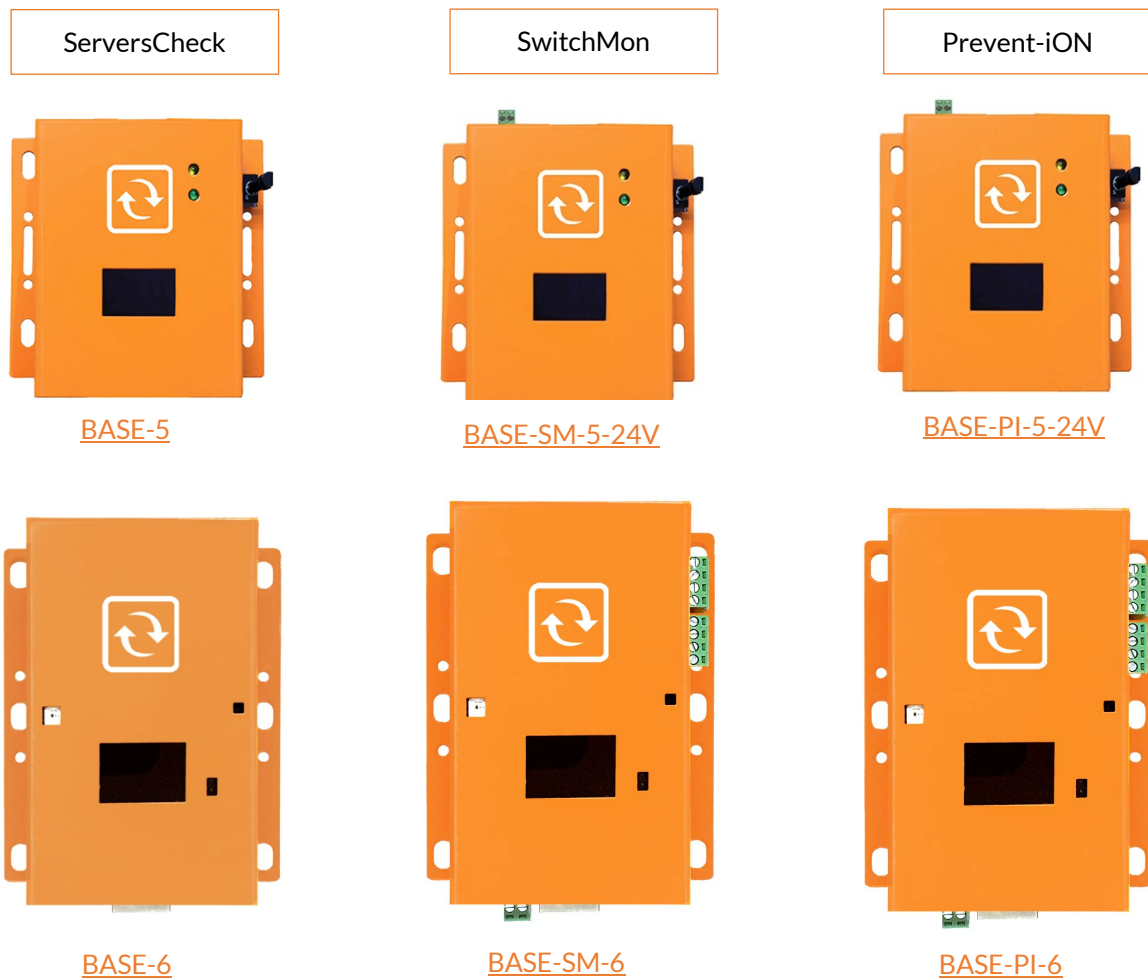
Provides continuous thermography, condition, and environmental monitoring for switchgear and critical power.

ServersCheck® –

Delivers complete monitoring for Tier 3 & 4 data centers, modular IT rooms, and white space environments

1.2 Base Unit Overview

The Base Unit is the heart of the InfraSensing sensors. This Base Unit is where all the smart logic resides : from connection to monitoring, reporting and alerting.



The Base Unit is connected to the network via a standard network cable over a 10/100Mbps network. It supports PoE too. This allows for powering the sensors without having to rely on external power adapters. If you don't have a PoE network then a power adapter is optionally available. Each Base unit is specifically designed to support a unique set of sensors, ensuring compatibility and functionality tailored to their applications. This means that the sensors supported by each Base Unit are carefully selected to match its specific capabilities, enabling optimized performance for different use cases.

Note : If a power adapter (BASE-PWR) and PoE is plugged into the Base Unit to supply power at the same time the Base Unit will automatically switch to the power adapter and use the PoE as backup. Also the Base Unit will not shutdown or restart if either one is unplugged.

In the following sections of this user manual, we are going to describe in detail the configuration and operation of the Base Unit.

The maximum tested length between a PoE switch and the Base Unit is 330ft or 100meters (using Cat6 shielded cables). Actuals may vary depending on cable quality, switch and environmental factors.

1.2.1 ServersCheck – Base Unit

BASE-5

The Base Unit is a stand-alone, IP-based monitoring device with built-in alerting features, serving as the foundational unit for our entire ServersCheck sensor solution lineup.

The BASE-5 version incorporates various built-in features, including an onboard temperature sensor, a secure HTTPS-enabled web server, and a fully responsive web interface accessible on desktops, tablets, or smartphones.

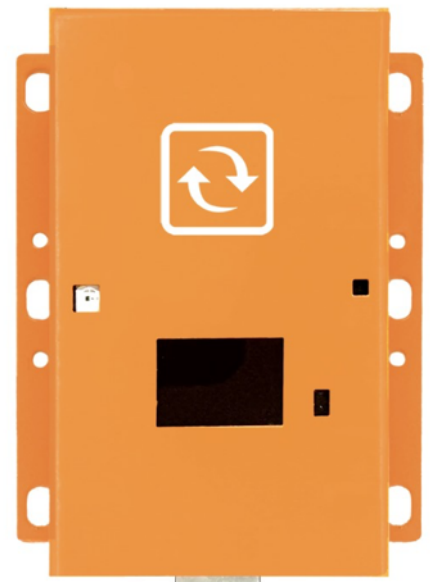
This Base Unit seamlessly supports all ServersCheck sensors except for Gas and Thermography sensors, enabling real-time environmental and infrastructure monitoring for comprehensive facility management.



BASE-6

The BASE-6 is an updated version of the Base Unit that includes new built-in features, such as RS485 on a terminal block. It boasts a data memory of QSPI 256Mbit and allows for the insertion of an SD Card. Additionally, it has two status LEDs on the PCB.

This Base Unit seamlessly supports all ServersCheck sensors except for Gas and Thermography sensors, enabling real-time environmental and infrastructure monitoring for comprehensive facility management.



1.2.2 SwitchMon – Base Unit

BASE-SM-5-24V

Compared to the regular base unit, the BASE-SM-5-24V is equipped with a terminal block for power connections, offering a more secure and industrial-grade alternative to the traditional barrel jack.

This design enhances its suitability for industrial environments where reliability and robustness are essential.

This Base Unit seamlessly supports all SwitchMon-compatible sensors, except for Gas sensors, enabling real-time environmental and infrastructure monitoring for comprehensive facility management.

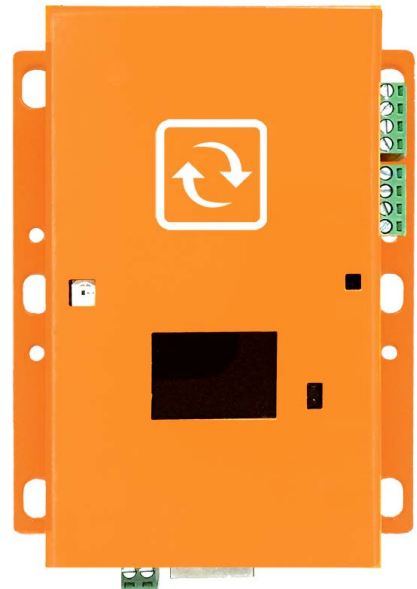


BASE-SM-6

The BASE-SM-6 is an updated version of the Base Unit that includes new built-in features, such as RS485 on a terminal block with 1 relay output.

This base unit serves as the foundational unit for our entire SwitchMon sensor. It boasts a data memory of QSPI 256Mbit and allows for the insertion of an SD Card. Additionally, it has two status LEDs on the PCB.

This Base Unit seamlessly supports all SwitchMon-compatible sensors, except for Gas sensors, enabling real-time environmental and infrastructure monitoring for comprehensive facility management.



1.2.3 Prevent-iON Base Unit

BASE-PI-5

The BASE-IP-5 is a stand-alone, IP-based monitoring device with built-in alerting features, serving as the foundational unit for our Prevent-iON solution lineup.

This Base Unit seamlessly supports all sensors, enabling real-time environmental and infrastructure monitoring for comprehensive facility management.



BASE-PI-5-24V

Compared to the regular base unit, the BASE-PI-5-24V is equipped with a terminal block for power connections, offering a more secure and industrial-grade alternative to the traditional barrel jack.

This design enhances its suitability for industrial environments where reliability and robustness are essential.

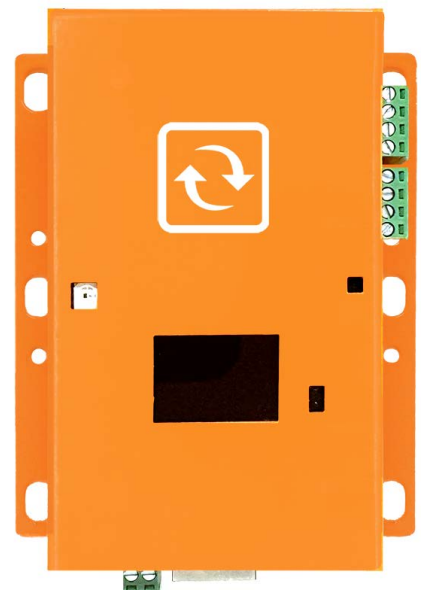
This Base Unit seamlessly supports all sensors, enabling real-time environmental and infrastructure monitoring for comprehensive facility management.



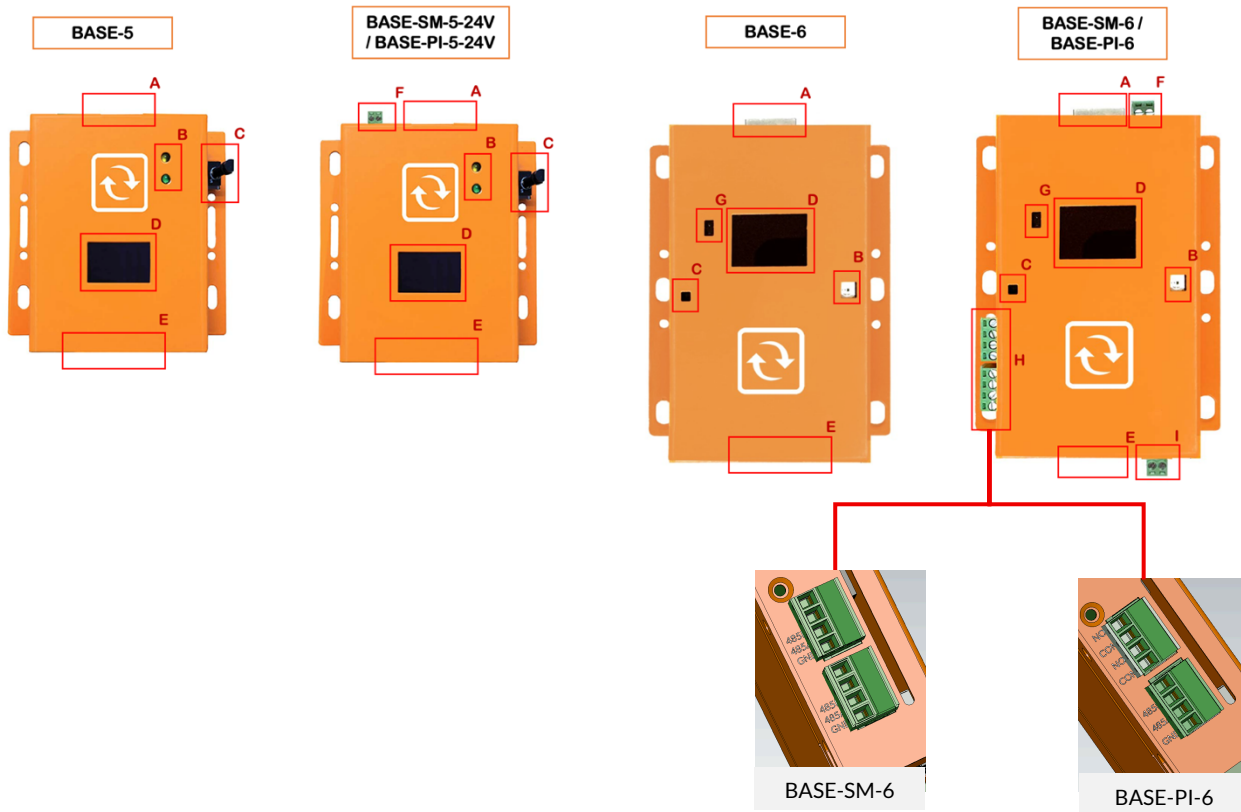
BASE-PI-6

The BASE-PI-6 is an updated version of the Base Unit that includes new built-in features, such as RS485 on a terminal block with 3 relay output. It boasts a data memory of QSPI 256Mbit and allows for the insertion of an SD Card. Additionally, it has two status LEDs on the PCB.

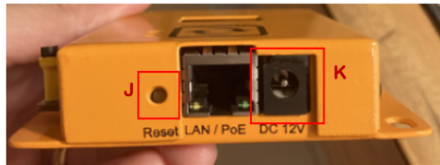
This Base Unit seamlessly supports all sensors, enabling real-time environmental and infrastructure monitoring for comprehensive facility management.



1.3 Base Unit Hardware Overview



- A. Ethernet/PoE Port – for network and PoE connection via RJ45
- B. Status LED
 - a. Yellow (Network) – Stable = Network established, No Light = No Network
 - b. Green (Sensor) – Stable = External Probe detected, No Light = No External Probe
- C. Int. Temp. – Base Unit’s built in Temperature Sensor
- D. OLED Screen
 - a. OLED displays a rolling banner that has the following information:
 - i. Base Unit IP Address
 - ii. Date
 - iii. Time
 - iv. Internal Temperature of Base Unit
- E. Sensor Probe Ports – where sensor probes connect via RJ45
- F. Power supply input – another option to power up the base unit with 12v DC to 24v DC input via the terminal block
- G. Proximity sensor – this feature activates when motion is detected or when you hover your hand above it, causing the OLED display to light up, this can also be disabled.
- H. RS485 port – BASE-SM-6
- H. RS485 Connection and Relay – BASE-PI-6
- I. Relay output



BASE-5



BASE-6

- J. Reset Button - Pressing the Reset button will present you with three options: 'Start Webserver', 'Reboot', and 'Load Defaults'. To perform any of the options, hold the reset button until the desired option appears on the OLED display. Once the desired option is displayed, release the reset button.



- K. Power Adapter DC Jack – where optional Power Adaptor connects to provide power when PoE is unavailable.
- L. DC IN 24V-48V – This is your 2-pin terminal block. You can connect your external DC power wires to these pins in any order.

1.4 Base Unit's LED Table



The following table details the different led indication combinations allows you to visually get the nature of the state/issue

details the combinations. Each

Yellow LED (Network/Online)	Green LED (Sensor)	Description
Flashing (fast, ~1/10 sec)	On	Updating firmware after reboot. Reboot time is about 5 seconds before Base Unit is ready.
Flashing (slow, ~1 sec)	Any	Can't sync with NTP (time) server
On	Any	Synchronized with NTP (time) server
Any	Flashing	Can't communicate with external sensor probe
Any	On	Connected with external sensor probe

Normal Power on Reset, No New Firmware Uploaded

Power ON state: Yellow & Green LED are ON for 2 seconds and start flashing Run state: Yellow & Green LED are both flashing

Green LED is ON if able to connect with external sensor probe Yellow LED is ON if able to sync with NTP (time) server

Reboot, New Firmware Uploaded

Power ON state: Yellow & Green LEDs are ON for 1 second and Yellow LED starts flashing

Updating firmware state: takes around 20 seconds

Green LED stays ON

Yellow LED will flash very fast (about 1/10 seconds)

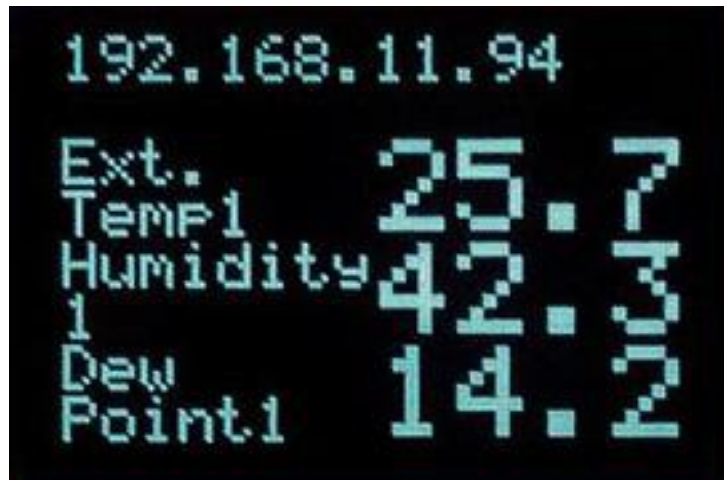
Ready state: Yellow & Green LED are both flashing

Green LED is ON if able to connect with external sensor probe Yellow LED is ON if able to sync with NTP (time) server

Note :

Various options will appear including Start, Webserver, Reboot, and Load Default, depending on the duration of pressing the reset button.

1.5 OLED display subscripts



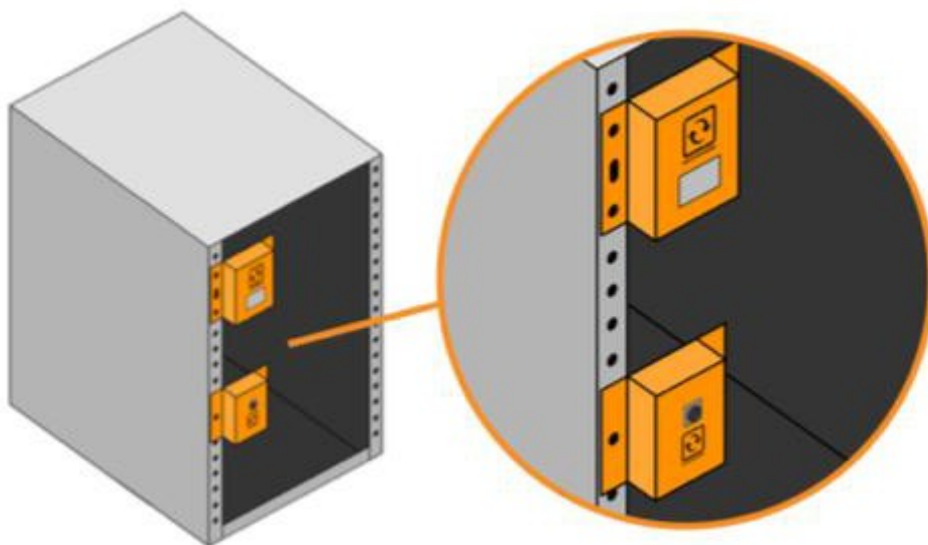
The OLED display gives one a quick view of the values the Base Unit reading. The reference for the order of the subscript numbering is completely dependent on how the web page is showing it.

1.6 Mounting Options

1.6.1 Rack Mounting

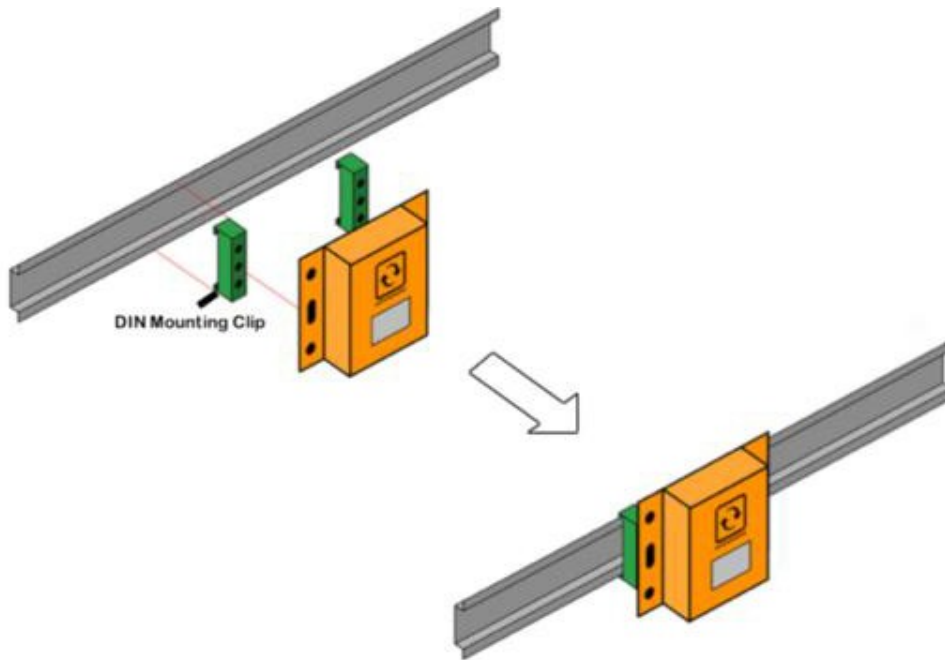
The Base Unit and most of our sensors are 0U devices that can be easily and securely mounted in a rack using standard rack mount screws with a head of at least 0.65cm / 0.26 inch. Although one screw is sufficient to hold the whole equipment in place, a second one improves stability.

Typically, the sensors are mounted at the rear of the rack where ample place is available so that it doesn't use any space reserved for server and other network rack mounted equipment.



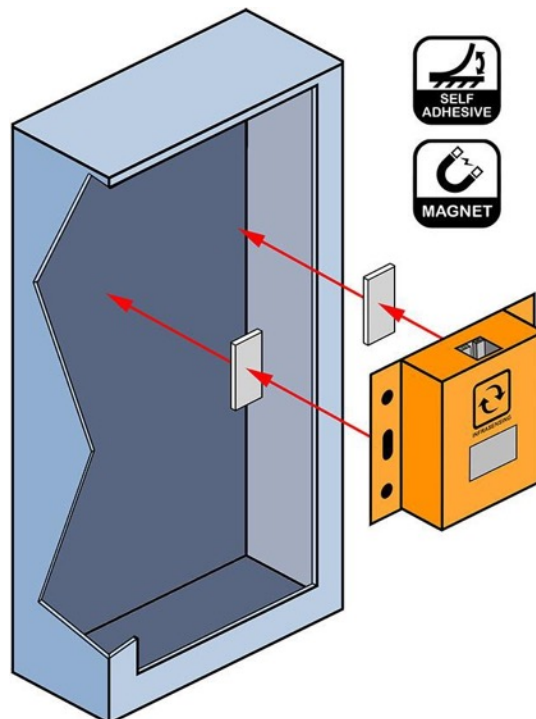
1.6.2 DIN rail mounting

The base unit has DIN mounting provisions that can be easily attached on DIN mounting clips using standard screws with a head of at least 0.6cm / 0.24 inch. The clips are then mounted on DIN rails as shown on the image below.



1.6.3 Magnetic mounting

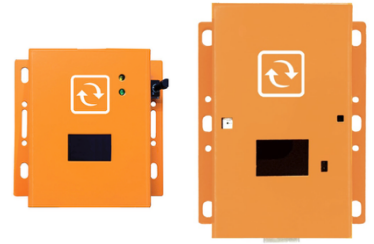
As our base unit, add-ons, expansion hubs, and most sensors feature a metal steel enclosure, the devices can also be mounted using simple magnets.



1.7 Powering up Base Unit

This section explains the different methods for powering various types of Base Units, including available power options and proper connection guidelines.

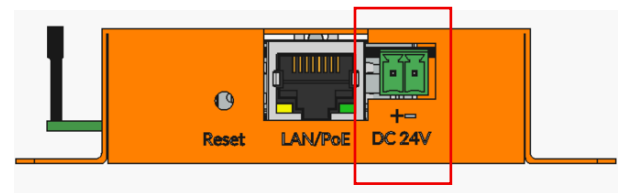
- BASE-5
 - PoE: IEEE 802.3af or BASE-PWR (Optional AC power adapter) or BASE-PWR-USB (USB-power adapter)
- BASE-6
 - It is powered via PoE or 12v DC input via the terminal block
- BASE-SM-5-24V
 - Powered by PoE or 24VDC input via terminal block
- BASE-PI-5-24V
 - Powered by PoE or 24VDC input via terminal block



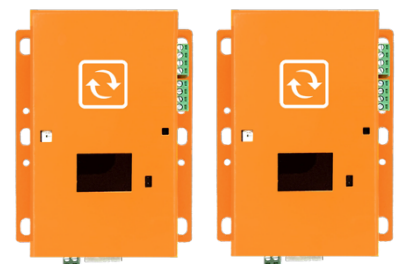
⚠ IMPORTANT NOTE:

For **BASE-SM-5-24V** and **BASE-PI-5-24V**, correct polarity is required. Always connect the positive (+) wire to the positive terminal and the negative (-) wire to the negative terminal.

Incorrect polarity may result in permanent damage to the Base Unit and will void the warranty.



- BASE-SM-6
 - Powered by PoE or 24V-48VDC input via terminal block, or 12VDC via power adapter
- BASE-PI-6
 - Powered by PoE or 24V-48VDC input via terminal block, or 12VDC via power adapter



1.8 Base Unit Interface Overview

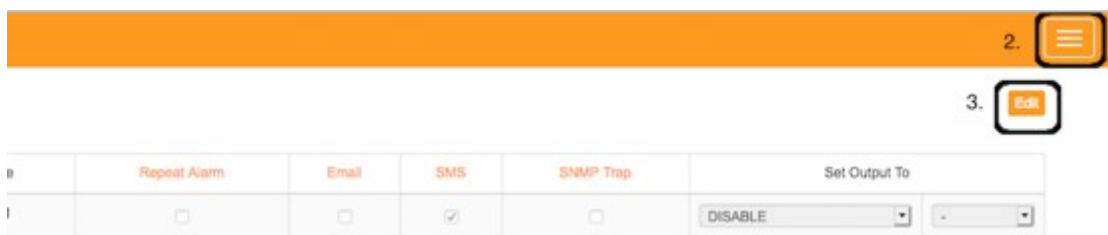
Connect to the InfraSensing Base Unit using your browser and on the IP address defined in the next section.



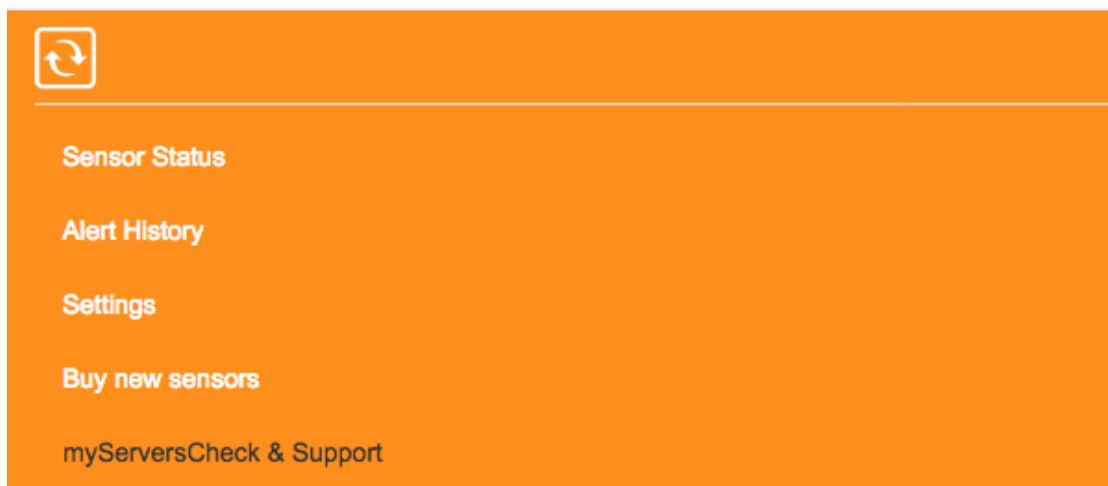
(1) This is the Home Button which will bring you to the sensor information page whenever it is clicked.

(2) The sensors will be shown on this portion of the page

(3) Additional options will appear on this area depending on the sensor connected (Wireless Hub, Thermal Image, etc.)



(4) The Menu Button, when clicked will show the options on the image below.



(5) Edit button to configure the thresholds and alerting features for each of your sensor

1.9 Configuring the Base Unit to the network

The Base Unit can have 2 types of IPv4 addresses: Fixed or Dynamic (using DHCP). By default, the gateway will try to get an IP address via DHCP to connect to your network.

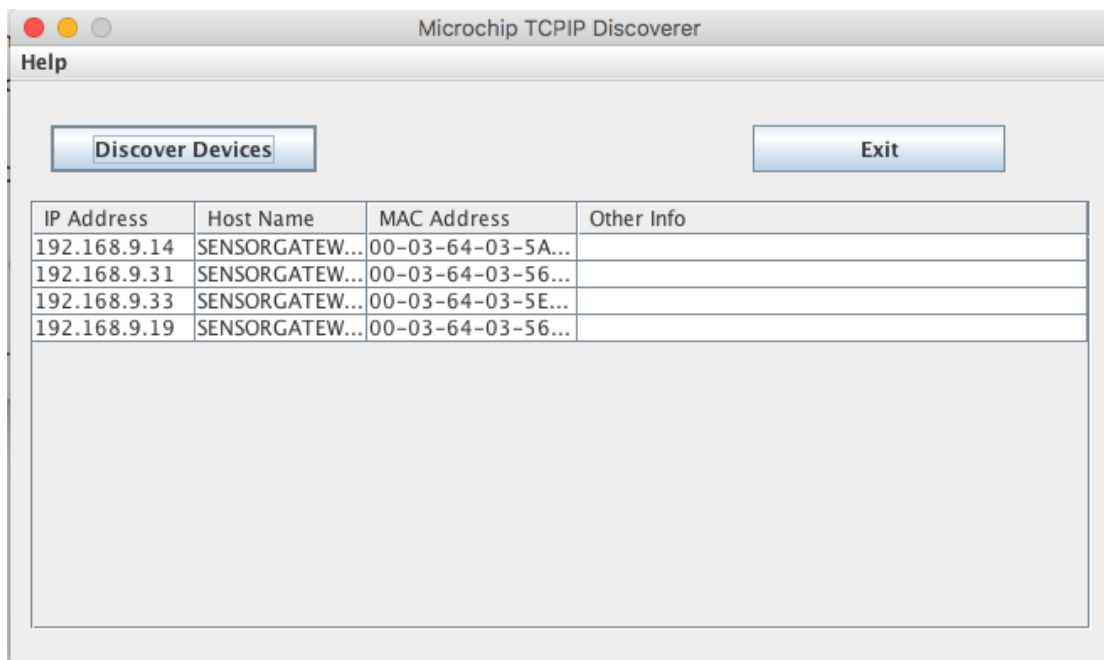
If this fails, then the default IP address from factory of the Base Unit is **192.168.11.160**

To change the IP address to a different fixed one, proceed as follows.

We highly recommend not using DHCP but instead to use fixed IP addresses. Make sure the Base Unit is plugged with a network cable into the network.

1.10 Base Unit discovery tool

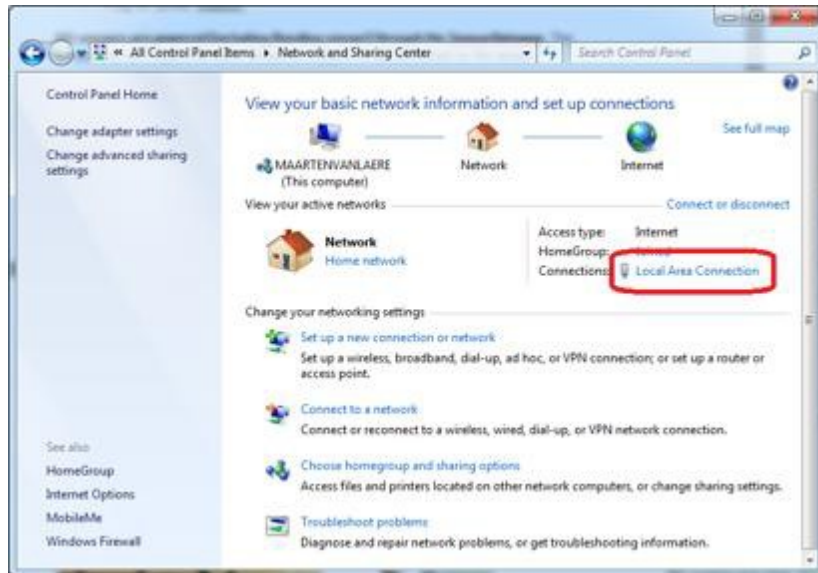
If you have connected multiple gateways and wanted to check their IP/MAC address you can use our tool to immediately show all the Base Unit connected within your network. All you have to do is run the software, which can be downloaded, from <https://infrasensing.com/support/downloads.asp> Works with Windows(Discoverer.exe) and Mac OS(Discoverer.jar).



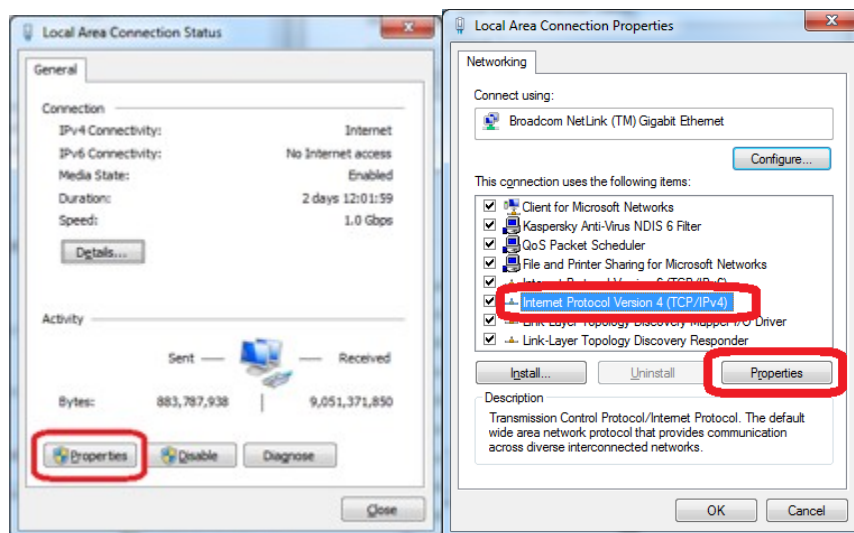
1.11 Set your PC in the same network segment as the Base unit

The steps below apply to a Windows 7 system. For other systems (Windows, Mac, Linux) steps are similar. You may skip the instructions entirely, provided your gateway received an IP address from your DHCP server (you can check via our Network Discovery Tool) or your network segment is already the same as the gateways default IP and that the IP 192.168.11.160 is not being used/leased.

Go to Network Panel > Network & Sharing Center



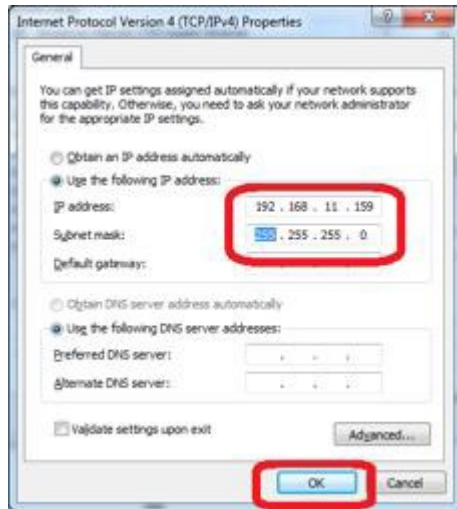
Click on **Local Area Connection** and then click on **Properties**. In the new window select **Internet Protocol Version 4** and click on the **Properties** button.



Now you need to set in the Properties window your PC in the same IP range as the sensor. Remember the current settings of your PC before changing any value!

We recommend setting it to 192.168.11.159 as shown below. When done, click on the **OK** button.

You can now plug your Base Unit directly to your PC



Note:

The gateway needs a Power Adapter so you can directly connect it via the PC's Ethernet port unless the port supports PoE.

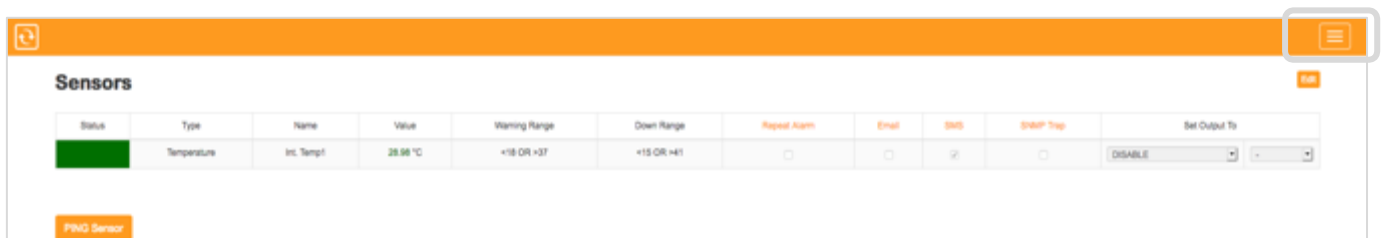
1.12 Connecting to the Base Unit via the default IP

Open your browser and surf to <http://192.168.11.160>. A connection will be made to the web server on board of the Base Unit and you will be prompted for a username & password. Default username and password is: **admin / admin**



When logged in you will be shown the main screen of the Base Unit with the first sensor reading being the built-in temperature probe.

In the main window, click on the **Menu button** located on the upper right corner of the page. Then click on settings, and once the page loads click on **"Change IP"**



Settings & Info

Device information

Account name

admin

[Change Password](#)

Current System Date

13 Feb 2019

Current System Time

00:24:47

[Update Time](#)

Hardware Version

Release 5.1

Firmware Version

Release 8.00 (Feb 12 2019)

[Upgrade Firmware](#)

Mac Address

00:03:64:03:44:40

IP Address

192.168.11.105

[Change IP](#)

Node Status (online/used/max)

2/17/44

[Calibrate Sensors](#)

You can now change the Base Unit’s IP address to any value you like: either to DHCP or to a fixed IP that would fit your local network. We will now set it to 10.0.0.36 with its default gateway to 10.0.0.1 respectively. As for the DNS server feel free to use any, in this set up, we will use 4.2.2.2 and 8.8.8.8. You can also see the MAC address of the gateway and set the Net BIOS Name.

Note: If you want to make a device accessible via DNS please make sure that the Net BIOS Name is 15 or more characters if not, then it will be appended with a blank space because of the padding process of Microsoft please see link. <https://technet.microsoft.com/en-us/library/cc958811.aspx>

Once the value has been changed, the Base Unit will reboot itself and will then be accessible through the newly defined IP.

Network Settings

Fixed IP

DHCP

ICMP Server

IP Address

Subnet Mask

Gateway

Primary DNS

Secondary DNS

Net BIOS Name

Mac Address (HEX)

Update

Reset

10.0.0.36

255.255.255.0

10.0.0.1

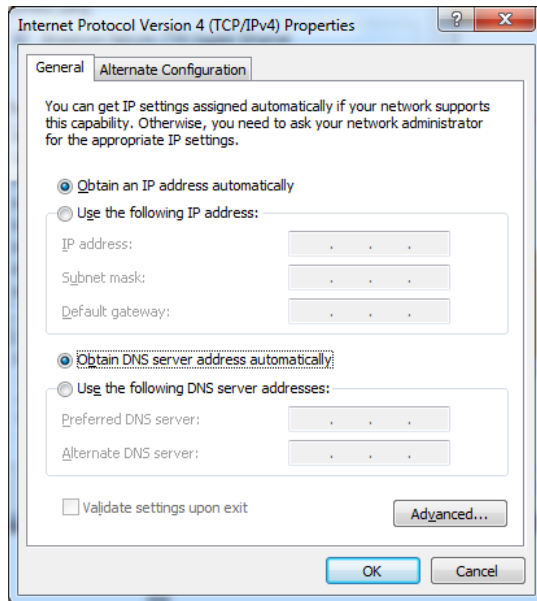
4.2.2.2

8.8.8.8

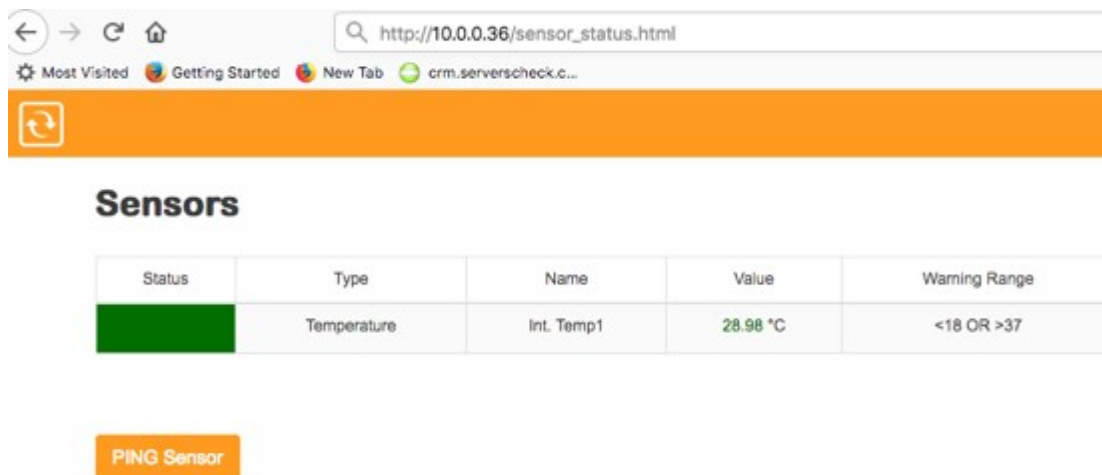
SENSORGATEWAY

00:03:64:03:03:E8

Now reset your system to its normal IP address. In our case we reset it to DHCP.



We will now check the Base Unit and connect to its new IP address by connecting to it using a browser.



As seen on the image above, We were able to access the gateway via its new IP address since our network segment is set at 10.0.0.X and we set our computer back to DHCP the gateway is now connected and can be accessed through our network.

1.13 Updating the firmware of the Base Unit

InfraSensing may release from time to time new firmware versions for its Base Units.

You can check your currently installed firmware version by going to your Base Unit, and then click on the menu option then settings.

Settings & Info

Device information

Account name

admin

Change Password

Current System Date

14 Feb 2019

Current System Time

03:57:16

Update Time

Hardware Version

Release 5.1

Firmware Version

Release 8.00 (Feb 12 2019)

Upgrade Firmware

Mac Address

00:03:64:03:44:40

IP Address

192.168.11.104

Change IP

Node Status (online/used/max)

3/43/44

Calibrate Sensors

Go to your <https://my.infrasensing.com/> account to check for new firmware releases.

You must be on firmware version 8.5 or above before uploading the latest firmware.

Download the firmware to your PC and then go with your browser to the Base Unit you wish to upgrade.

Click on the **Upgrade Firmware** option and then click on the **Browse** button to locate the downloaded firmware file. Only then click on the **Upload** button.

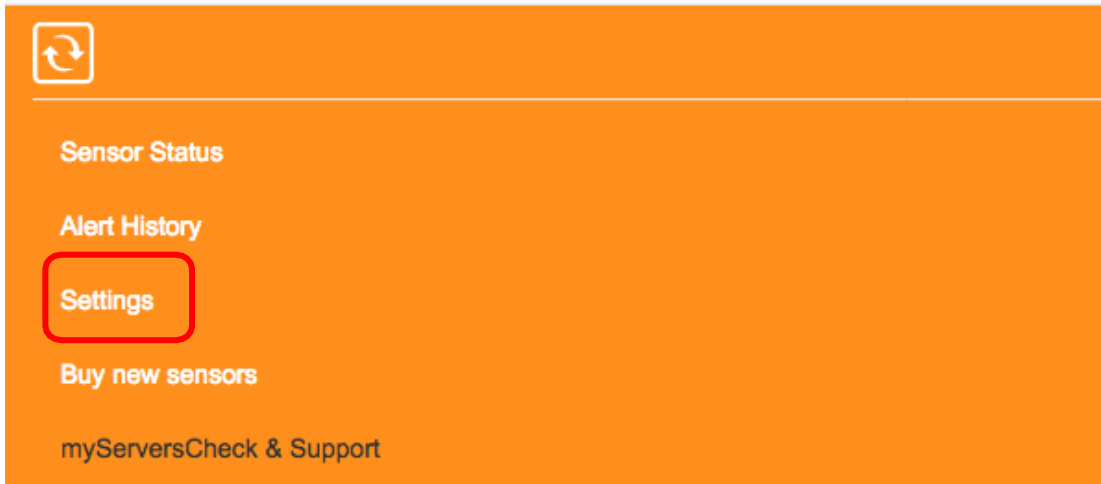
Your Base Unit will now start loading the new firmware. Your Base Unit will be available on <http://192.168.11.160> (Default) or via the IP address shown on its OLED after the firmware update has been completed

Note: Should the upgrade fail and should the Base Unit be unresponsive then perform a factory reset as described in section 8.

1.14 Configuring the Base Unit's access security

The Base Units can be username and password secured. Default factory values are **admin/admin**

To change the values, click on the **Settings** menu option



Click on “Change Password” and enter the new username and password

Settings & Info

Device information

Account name

admin

Change Password

Current System Date

14 Feb 2019

Current System Time

01:02:05

Update Time

Hardware Version

Release 5.1

Firmware Version

Release 8.00 (Feb 12 2019)

Upgrade Firmware

Mac Address

00:03:64:03:44:40

IP Address

192.168.11.104

Change IP

Node Status (online/used/max)

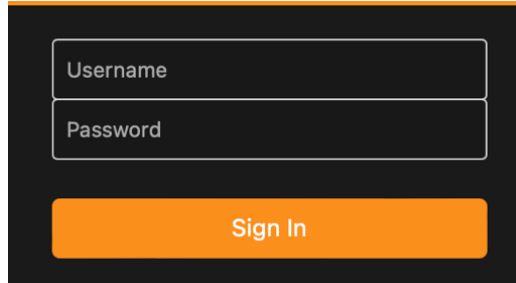
3/43/44

Calibrate Sensors

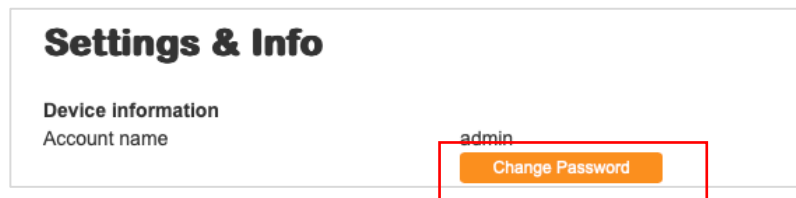
2 Base Unit Security Feature

2.1 Username and Password configuration

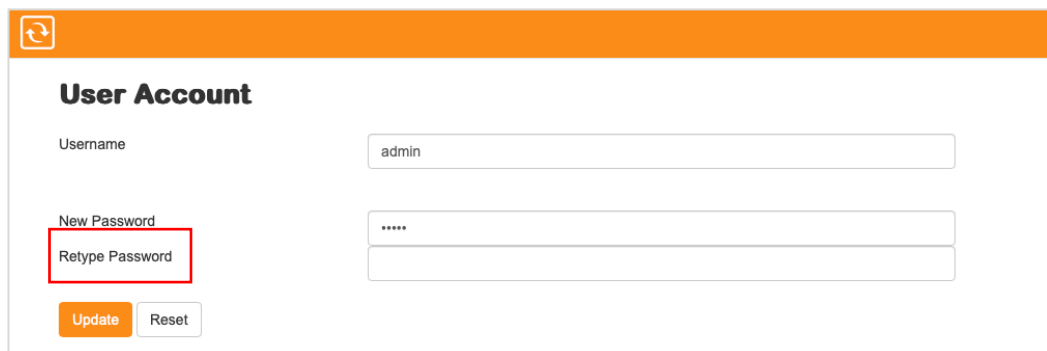
Every time you access your base unit, a pop-up message will appear prompting you to enter your username and password.

A dark-themed login pop-up form. It contains two input fields: 'Username' and 'Password'. Below these fields is a large orange button labeled 'Sign In'.

You can configure or edit the username and password for your device by accessing the settings of your base unit and click on the change password.

A screenshot of the 'Settings & Info' page. Under the 'Device information' section, the 'Account name' is listed as 'admin'. To the right of the account name is an orange button labeled 'Change Password', which is highlighted with a red rectangular box.

On this page, you can configure the username for your base unit and update your password. Please note that the password must be between 5 and 20 characters in length. Once you have updated it, simply click on the "Update" button.

A screenshot of the 'User Account' configuration page. It features a header with a refresh icon. The page has two main sections: 'Username' with a text input field containing 'admin', and 'New Password' with two text input fields (one for the new password and one for retyping it). The 'Retype Password' label and its corresponding input field are highlighted with a red rectangular box. At the bottom, there are two buttons: 'Update' (orange) and 'Reset' (white).

2.2 Firewall settings

Firewall can be accessed through your gateway's settings by clicking on the button on the upper right,



With this feature you may configure your gateway to allow access to specific IP/MAC or a range of IP/MAC addresses.

Firewall Settings

This firewall feature enables to disable access to the web interface, SNMP agent or Modbus TCP based on the IP address **AND** MAC address filters.

You can use wildcards (*) to allow multiple addresses from a same subnet to access the device..

Your IP: 192.168.11.45
Your MAC address: C0:56:27:39:6E:24

IP address #1	***
IP address #2	***
IP address #3	
IP address #4	
IP address #5	
MAC #1	*****
MAC #2	*****
MAC #3	
MAC #4	
MAC #5	

Note that both fields cannot be left blank. The input “*.*.*.*” will allow all IP and as for allowing all MAC address we need to input “*:.*.*.*.*”, they are already typed in by default.

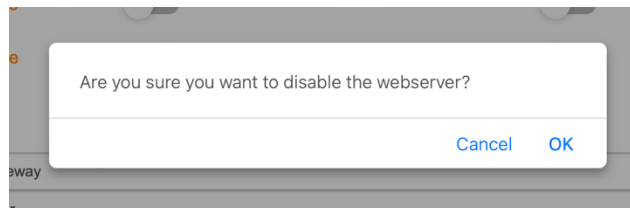
Note: MAC address letters should always be in upper case.

2.3 Enabling and Disabling Web Server

Web Server is one of the newest features included in the latest firmware version. Disabling the web server option restricts the ability to send commands or configure settings. To disable it, simply select "Disable" from the dropdown menu and click "Update".



Once you click on "Disable", a pop-up message will appear asking if you want to disable the web server. After you click "Ok" and then "Update", the web server is disabled. You will not be able to load the web server, send commands or configure it.



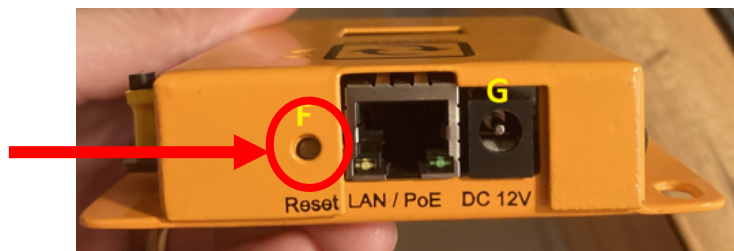
After you disable the web server, your base unit will automatically reboot, and you will see this reflected in your base unit's OLED.



After the base unit reboots, a message will appear to inform you that the Web server is Disabled.

Please note that a common mistake users make when unable to access the base unit is that the web server is turned off. To verify, reboot the base unit and check the OLED display for the message indicating that the web server is Disabled or off.

To enable it back, you will need to be near the device as you need to press the reset button 4 times within 2 seconds. This is an additional security measure added to the Web Server feature, as you will need to be physically present with the device to manually re-enable it.



After you enable the web server again, a message will appear on the Base Unit's OLED display indicating that the Web server is Enabled, and you may now access your web server again.



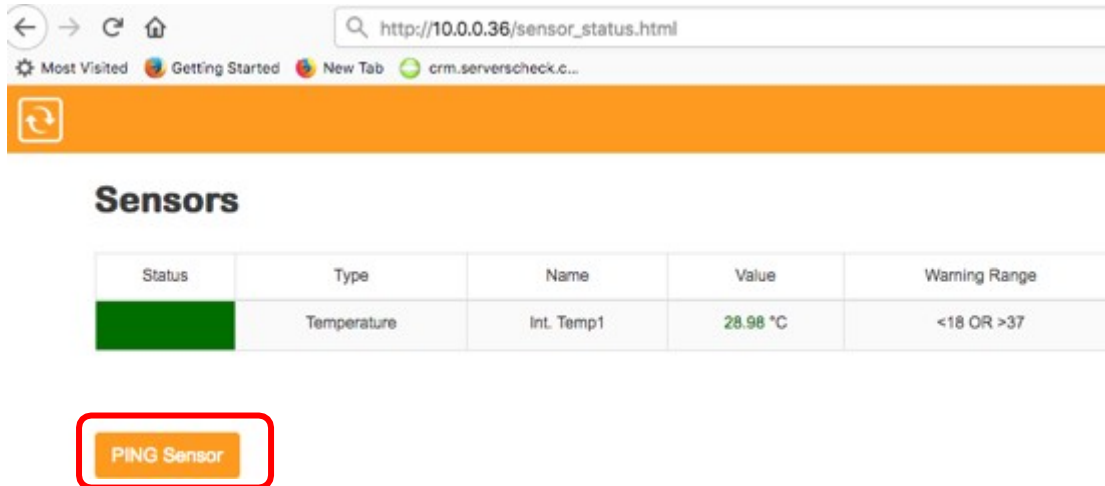
3 Base Unit features and configuration

3.1 Int. ping

Once you have updated to firmware 8.0 and above an internal ping check is added on our sensor list where in you can check the status of your connection to a specific URL or IP address in which a great example is trying to ping another gateway (BASE-XX).

How to set it up

1. Access your gateway and click on the “PING” option.



2. Make sure to click on “Enable Ping”

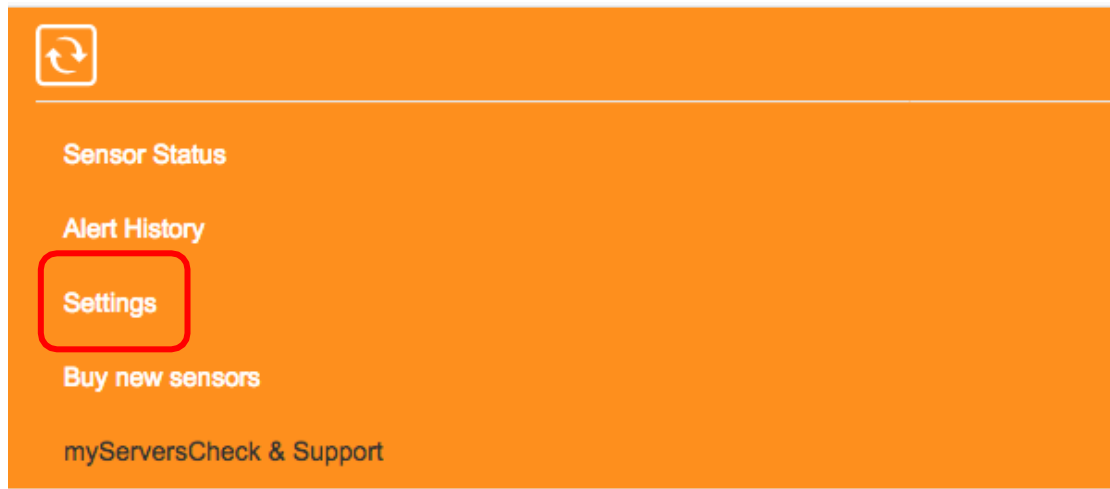


3. Input the URL / IP address you wanted you check and then click on UPDATE.

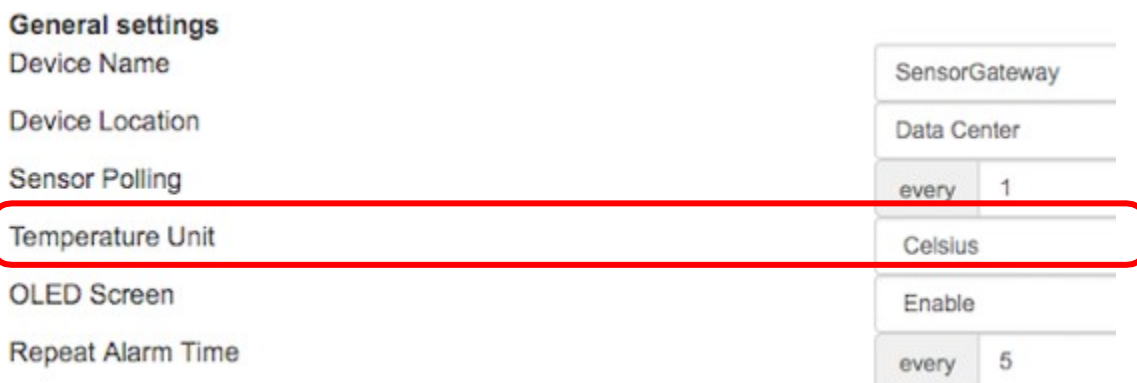


3.2 Configuring the Fahrenheit / Celsius readings

The default setup is readings in Celsius. However, through a simple switch, the sensor readings can be set to Fahrenheit. Simply connect to the Base Unit, go to the menu option and click on settings.

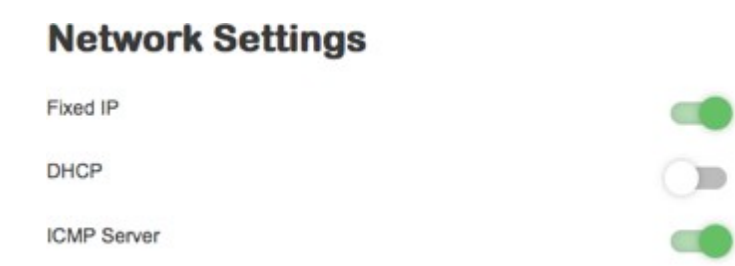


Change the value from Celsius to Fahrenheit under general settings.



3.3 ICMP server

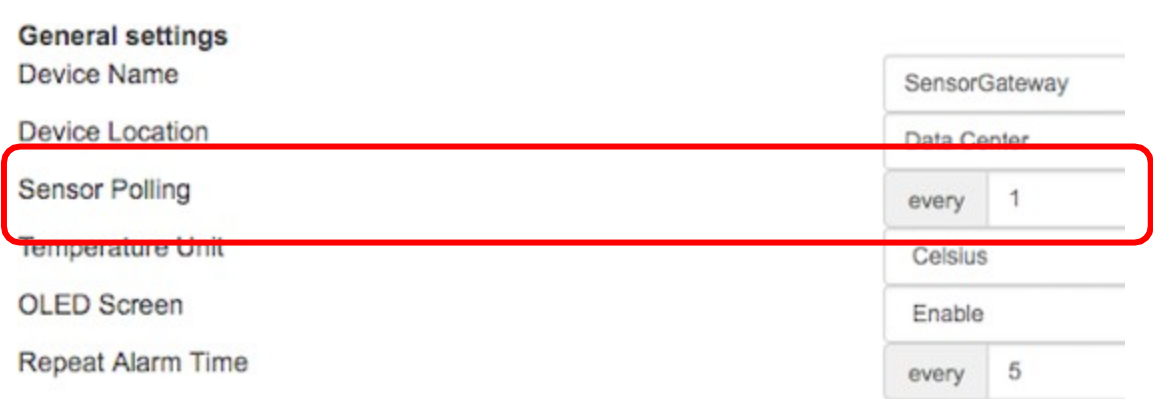
The Internet Control Message Protocol (ICMP) is widely used for diagnostic purposes



By Default your ICMP Server is enabled, you may disable it through your network settings page.

3.4 Sensor polling/refresh time

Can also be found under general settings, the unit dictates the time the gateway polls/gets the data from any of the sensors connected to it. Recommended setting is from 1-5 seconds.



3.5 Configuring internal clock of the Base Unit

To modify the internal clock, click on the menu option and then go to settings and then click on “Update Time”. You can either set it manually or have it synchronized with a timeserver as shown in the picture below. Click on **Update** when done

SNTP Settings

Use SNTP Time Server
☒

Current Device Date & Time
14 Feb 2019 01:12:03

Update date time to

14
February
2019
-
1
:
10

IP Address SNTP Time Server
us.pool.ntp.org

Time Zone
+8 (configured)

SNTP Sync Frequency
every 1

Update
Reset

Following table provides a list of time zones in UTC offset per country.

Country	UTC time offset	Country	UTC time offset
A		M	
Afghanistan	+04	Macedonia *	+01
Albania *	+01	Madagascar	+03
Algeria	+01	Malawi	+02
Andorra *	+01	Malaysia	+08
Angola	+01	Maldives	+05
Antigua and Barbuda	-04	Mali	±00
Arg'entina	-03	Malta *	+01
'Ar'enia	'04	Marshall Islands	+12
Australia – 5 time zones		Mauritania	±00
Western Australia'08 Northern Territory		Mauritius	+04
+09			
South 'Australia * +09 Austra'lian C'apital		Mexico * – 3 time zones	
Territory * +10 New South Wale's * +10		The state o'Baja California –08 The states	
		of	
Queens'a'+10 Tasmania * '10 Victoria * '+0		Baja California Sur, Chihuahua, Nayarit,	
Lor'			
Howe Island'* +10 M'c'uraei Is'and +11		Sinaloa and Sonora –07 Most of Mexico	
		–06	
Australian Overseas Territories – 6 time		Micronesia – 2 time zones	
Zones		The states of Chuuk and Yap +10 The	
		states	
Heard Island and McDonald Islands +05		of Kosrae and Pohnpei +11	
Cocos (Keeling) Islands +06 Christmas		Moldova *	+02
Island			
+07 Ashmore and Cartier Islands +08		Monaco *	+01
Coral			
Sea Islands +10 Norfolk Island +11		Mongolia * – 2 time zones	
Austria *	+01	Provinces of Khovd, Uvs, Bayan-Olgii +07	
Azerbaijan *	+04	Ulaanbaatar and most of the country +08	
B		Montenegro *	+01
Bahamas *	- '5	Morocco *	±00
Bahrain	+03	Mozambique	+02
Bangladesh	+06	Myanmar (Burma)	+06::
Barbados	-04	N	

Belarus	+03	Namibia	+01
Belgium *	+01	Nauru	+12
Belize	-06	Nepal	+05:45
Benin	+01	Netherlands *	+01
Bhutan	+06	Netherlands Overseas Territories – 1 time	

Bolivia	-04	zones	
Bosnia and Herzegovina *	+01	Aruba -04 Caribbean Netherlands -04	
Botswana	+02	Curaçao -04 Sint Maarten -04	
Brazil – 4 time zones		New Zealand *	+12
Acre and Southwestern Amazonas -05		New Zealand's Dependent Territories – 4	
Most		time zones	
part of the Amazonas State, Mato Grosso,		Niue – 11 Cook Islands – 10 Chatham	
Mato Grosso do Sul, Rondônia, Roraima		Islands	
-04		+12:45 Tokelau +13	
The Southeast, the South, the Northeast		Nicaragua	-06
Regions (except some islands), Goiás,			
Distrito		Niger	+01
Federal, Tocantins, Pará, Amapá -03			
Islands		Nigeria	+01
on the east coast of Brazil (Fernando de		North Korea	+09
Noronha, Trindade, Martin Vaz, Atol das		Norway *	+01
Rocas, Saint Peter and Paul Rocks) -02		O	
Brunei	+08	Oman	+04
Bulgaria *	+02	P	
Burkina Faso	±00	Pakistan	+05
Burundi	+02	Palau	+09
C		Palestine *	-06
Cabo Verde	-01	Panama	-05
Cambodia	+07	Papua New Guinea	+10
Cameroon	+01	Paraguay	-04
Canada – 6 time zones		Peru	-05
Larger western part of British Columbia,		Philippines	+08
Tungsten and the associated Cantung			
Mine		Poland *	+01
in Northwest Territories, Yukon -08		Portugal *	±00
Alberta,		Portugal - Azores *	+01
some eastern parts of British Columbia,		Q	
the			
Northwest Territories, Nunavut (west of		Qatar	+03
102°W and all communities in the		R	
Kitikmeot			
Region), Lloydminster -07 Manitoba,		Romania *	+02
Nunavut (between 85°W and 102°W		Russia – 9 time zones	
except		Kaliningrad Oblast +03 Most of European	
western Southampton Island), Ontario		Russia and all railroads throughout Russia	
(Northwestern Ontario west of 90°W with		+04 Bashkortostan, Chelyabinsk Oblast,	
some exceptions and Big Trout Lake area			
east of 90°W), Saskatchewan except		Khanty–Mansia, Kurgan Oblast, Orenburg	
Lloydminster -06 Nunavut east of 85°W		Oblast, Perm Krai, Sverdlovsk Oblast,	
and			
entire Southampton Island, Ontario east of		Tyumen Oblast, and Yamalia +06 Altai	
90°W (except Big Trout Lake area), the		Krai,	
most		Altai Republic, Kemerovo Oblast,	
part of Quebec -05 Labrador (all but		Novosibirsk Oblast, Omsk Oblast and	
		Tomsk	
southeastern tip), New Brunswick, Nova		Oblast +07 Khakassia, Krasnoyarsk Krai	
Scotia, Prince Edward Island, eastern part		and	
of		Tuva +08 Buryatia and Irkutsk Oblast +09	
Quebec -04 Labrador (southeastern),		Amur Oblast, western Sakha Republic and	
Newfoundland -03			
Central African Republic	+01		

Chad	+01	Zabaykalsky Krai +10 The Jewish Autonomous Oblast, Khabarovsk Krai, Primorsky Krai, central Sakha Republic and Sakhalin Island +11 Magadan Oblast, eastern Sakha, Kuril Islands, Chukotka and Kamchatka Krai +12	
Chile	-04	Rwanda	+02
Chile - Easter Island	-06	S	
China	+08	St. Kitts and Nevis	-04
Colombia	-05	St. Lucia	-04
Comoros	+03	St. Vincent and The Grenadines	-04
Congo, Republic of the	+01	Samoa	+13
Congo, Dem. Rep. - Kinshasa	+01	San Marino *	+01
Congo, Dem. Rep. - Lubumbashi	+02	Sao Tome and Principe	±00
Costa Rica	-06	Saudi Arabia	+03
Cote d'Ivoire	±00	Senegal	±00
Croatia *	+01		
Cuba *	-05		
Cyprus *	+02		
Czech Republic	+1		
D			

Denmark *	+01	Serbia *	+01
Denmark's Dependent Territories * - 4 time zones		Seychelles	+04
The most of Greenland, including inhabited south coast and west coast -03 Greenland -		Sierra Leone	±00
Thule Air Base -04 Greenland -		Singapore	+08
Ittoqqortoormiit -01 Faroe Islands ±00		Slovakia *	+01
Djibouti	+03	Slovenia *	+01
Dominic	-04	Solomon Islands	+11
Dominican Republic	-04	Somalia	+03
E		South Africa	+02
Ecuador	-05	South Korea	+09
Ecuador - Galapagos Province	-06	South Sudan	+03
Egypt	+02	Spain *	+01
El Salvador	-06	Spain - Canary Islands *	±00
Equatorial Guinea	+01	Sri Lanka	+05
Eritrea	+03	Sudan	+03
Estonia *	+02	Suriname	-03
Ethiopia	+03	Swaziland	+02
F		Sweden *	+01
Fiji	+12	Switzerland *	+01
Finland *	+02	Syria *	+02
France *	+01	T	
French Overseas Territories - 10 time zones		Taiwan	+08
French Polynesia - Tahiti Island -10		Tajikistan	+05
French Polynesia - Marquesas Islands -09 French Polynesia - Gambier Islands -09 Clipperton Island -07 Guadeloupe -04 Martinique -04		Tanzania	+03
Saint Barthelemy -04 Saint Martin -04 French Guiana -03 Saint Pierre and Miquelon * -03 Mayotte +03 Réunion +04 Kerguelen Islands +05 New Caledonia +11 Wallis and Futuna +12		Thailand	+07
		Timor-Leste	+09
		Togo	±00
		Tonga	+13
		Trinidad and Tobago	-04
		Tunisia	+01
		Turkey *	+02
		Turkmenistan	+05
		Tuvalu	+12

G		U	
Gabon	+01	Uganda	+03
Gambia	±00	Ukraine	+02
Georgia	+04	United Arab Emirates	+04
Germany *	+01	United Kingdom *	±00
Ghana	±00	British Overseas Territories – 9 time zones	
Greece *	+02	Pitcairn Islands –08 Cayman Islands –05	
Grenada	–04	Anguilla –04 Bermuda –04 British Virgin	
Guatemala	–06	Islands –04 Montserrat –04 Turks and	
Guinea	±00	Caicos Islands –04 Falkland Islands –03	
Guinea-Bissau	±00	South Georgia and the South Sandwich	
Guyana	–04	Islands –02 Saint Helena ±00 Ascension	
H		and	
Hait'i *	–05	Tristan da Cunha ±00 Guernsey * ±00 Isle	
Honduras	–06	of	
Hungary *	+01	Man * ±00 Jersey * ±00 Gibraltar * +01	
I		Akrotiri and Dhekelia * +02 British Indian	
Iceland	±00	Ocean Territory +06	
India	+05	United States of America * – 6 time zones	
Indonesia – 3 time zones		Hawaii, most of the Aleutian Islands –10	
Islands of Sumatra, Java, provinces of		Most of the state of Alaska –09 The states	
West		on	
Kalimantan and Central Kalimantan +07		the Pacific coast plus Nevada, parts of	
Islands of Sulawesi, Bali, provinces of East		Idaho	
Nusa Tenggara, West Nusa Tenggara, E'st		–08 Arizona, Colorado, Montana, New	
Kalimantan and South Kalimantan +08		Mexico, Utah, parts of Idaho, Kansas,	
Provinces of Maluku, North Maluku,		Oregon, North Dakota, South Dakota,	
Papua		Texas	
and West Papua +09		–07 Gulf Coast, Tennessee Valley, U.S.	
		Interior Highlands, Great Plains, most of	
		Texas –06 The states on the Atlantic coast,	
		the eastern two-thirds of the Ohio Valley,	

Iran *	+03	most of Michigan –05	
Iraq	+03	US Dependent Territories – 7 time zones	
Ireland *	±00	Baker Island –12 Howland Island –12	
Israel *	+02	American Samoa –11 Kingman Reef –11	
Italy *	+01	Midway Islands –11 Palmyra Atoll –11	
J		Jarvis	
Jamaica	–05	Island –10 Johnston Atoll –10 Navassa	
Japan	+09	Island –05 Puerto Rico –04 US Virgin	
Jordan *	+02	Islands	
K		–04 Guam +10 Northern Mariana Islands	
Kazakhstan - Oral,	+05	+10 Wake Island +12	
Aktobe		Uruguay	–03
Kazakhstan 'Almaty,	+06	Uzbekistan	+05
Astana		V	
Kenya	+03	Vanuatu	+11
Kiribati – 3 time zones		Vatican City (Holy See) *	+01
Gilbert Islands +12 Phoenix Islands +13		Venezuela	–04
Line		Vietnam	+07
Islands +14		Y	
Kosovo *	+01	Yemen	+03
Kuwait	+03	Z	
Kyrgyzstan	+06	Zambia	+02
L		Zimbabwe	+02
Laos	+07		
Latvia *	+02		

Lebanon *	+02	
Lesotho	+02	
Liberia	±00	
Libya	+01	
Liechtenstein *	+01	
Lithuania *	+02	
Luxembourg *	+01	

3.6 Setting threshold values in the Base Unit for alerting

Connect to the Base Unit and click on “EDIT” located on the upper right corner just below the menu button. You will now see the button change into “Updated and Reset”

Sensors

Status	Type	Name	Value
	Temperature	Int. Temp1	29.61 °C
	Zigbee 1	WT-0221	25.93 °C

Update Reset

Warning Range		Down Range		Repeat Alarm	Email	SMS	SNMP Trap	Set Output To	
< 18	> 37	< 15	> 41	☐	☐	☒	☐	DISABLE	-
< 18	> 30	< 15	> 29	☐	☐	☐	☐	DISABLE	-

Status: this shows if the internal sensor or the external sensor probe is working or not

Type: type of reading for the sensor

Name this is the name of the sensor and will be used in alerting

Value: this is the latest reading for both the internal sensor and the external sensor probe **Warning range:** below the minimum value and above the maximum value a WARNING alert will be sent. Current value color will change to orange

Down range: below the minimum value and above the maximum value a DOWN alert will be sent. Current value color will change to red. DOWN overrules WARNING

Repeat alarm: when set then this will trigger an alert to be sent every 5 minutes Only if the status is on a DOWN state.

Email: when checked then email alerts will be sent for this sensor value

SMS: When checked then SMS or Voice call alerts will be sent for this sensor value

SNMP trap: when checked then a SNMP Trap will be sent for this sensor value

Note that the repeat alarm is customizable from the settings menu under General Settings.

3.7 Alarm and Ambient VOC

Ambient VOC refers to the calculated average of the last 10 readings from each individual VOC sensor. This means that if you have multiple sensors, each one maintains its own rolling averaged based on last 10 readings. This value provides a more stable indication of VOC levels over time, helping to smooth out sudden spikes.

VOC Alarm is a separate feature that triggers when a sensor detects VOC levels above a predefined threshold. This threshold is typically set to alert users of potentially harmful concentrations in real time. While the **Ambient VOC** provides a trend, the **VOC Alarm** highlights urgent conditions that may require immediate attention.

Both the **Warning Range** and **Down Range** thresholds for Ambient VOC can be configured based on user requirements by clicking the **Edit** button at the upper right side of the sensor homepage.

In the example shown in the screenshot below:

- The **Warning Range** is set to **>200**, meaning if the Ambient VOC value reaches **201 or higher**, the VOC Alarm status will change to **“Alarm”**, indicating that the VOC level has entered the warning stage.
- The **Down Range** is set to **>400**, meaning if the Ambient VOC value reaches **401 or higher**, the status will be considered as **“Down”**, and the VOC Alarm status will again change to **“Alarm”**, this time indicating that the VOC level has crossed into the down range.



Sensors											
Enable Maintenance Mode Edit											
Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	Alert+	SNMP Trap	Set Output To	
	Temperature	Int. Temp1	32.3 °C	<18 OR >37	<15 OR >41	☐	☐	☐	☐	DISABLE ▾	- ▾
	Fault	Int. Fault1	OK	-	SET	☐	☐	☐	☐	DISABLE ▾	- ▾
	Ambient VOC	Ambient VOC1	483.67	>200	>400	☐	☐	☐	☐	DISABLE ▾	- ▾
	VOC Alarm	Alarm VOC1	Alarm	-	SET	☐	☐	☐	☐	DISABLE ▾	- ▾
	VOC Index	VOC Sensor5	487	>100	>400	☐	☐	☐	☐	DISABLE ▾	- ▾
	Pure H2	Pure H2 Sensor2	0 %LEL	>25	>50	☐	☐	☐	☐	DISABLE ▾	- ▾

4 Base Unit alerting feature

4.1 Email alerting

The InfraSensing sensors can generate autonomous alerts via SNMP Traps and also via email. Make sure that the email checked as one of the alerting options for any of your sensors.

Repeat Alarm	Email	SMS	SNMP Trap
☐	☒	☐	☐

To setup email alerting, Go to the menu option, then settings and then click on the **Email** option under Industrial and external use.



This screen consists of 3 main parts:
Mail server settings

Mail heading settings (from, to, subject ...) Mail content (body)

NOTE : Please make sure you have whitelisted us in your system so that these emails can be delivered without delay or disruption. Also, we don't currently support gmail as of the moment, only outlook and yahoo.

Email Alert

Enable Email Alerts

☐

SMTP Server

mail.serverscheck.email

SMTP Port

465

SSL (v3)

☐

Use SMTP Authentication

☒

SMTP Username

Test

SMTP Password

From Email

Manual@serverscheck.com

To Email

Customer@gmail.com

CC

Note: Sending to multiple recipients can be separated by a comma however in respect to the “To” and “Cc” fields, To is limited to 90 characters and Cc is limited to 70, So if you need to send an email to multiple addresses then it is advised that you create a “group mail” and use that instead.

For email alerting, InfraSensing supports standard outgoing mail servers like the ones used by ISP's (SMTP relay servers) or corporate SMTP mail servers requiring standard username & password authentication. SSL mail servers are not supported. For use of SSL, web-based emails are recommended.

In some cases, it may happen that you don't have a non-SSL server available in your network or from your ISP. In such situations, we have 4 alternative solutions that may fix the issue.

4.2 Email alerts using the ADDON-LTE

Settings & Info

Device information	
Account name	admin
	Change Password
Current System Date	08 Feb 2020
Current System Time	01:49:43
	Update Time
Hardware Version	Release 5.1
Firmware Version	Release 8.20 (Feb 7 2020)
	Upgrade Firmware
Mac Address	00:03:64:03:6A:A4
IP Address	192.168.11.60
	Change IP
Node Status (online/used/max)	24/50/51
	Calibrate Sensors
	Cellular Add-On

Access the base unit and go to settings, under settings click on the Cellular Add-On button and then scroll down to access the email configuration.

Note: (see section for the ADDON-LTE) The built-in email feature of the Base Unit will be disabled upon using the ADDON-LTE

[illegible]

Input your email settings and perform a test mail, the ADDON-LTE is tested to work on our free email server, Gmail and yahoo mail. (Continue reading for sample email set up).

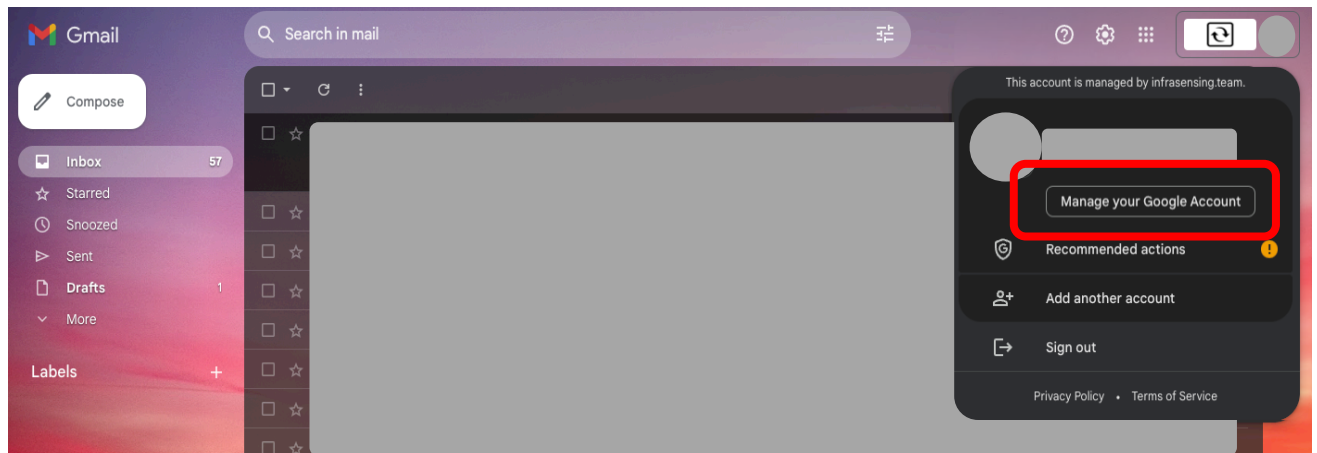
4.2.1 Gmail as e-mail server (<https://mail.google.com>)

To use Gmail as a mail server, you need to have a Gmail account. You may sign up for one at <https://mail.google.com> and port 25 should not be blocked by your ISP.

THINGS TO SET UP FOR GMAIL

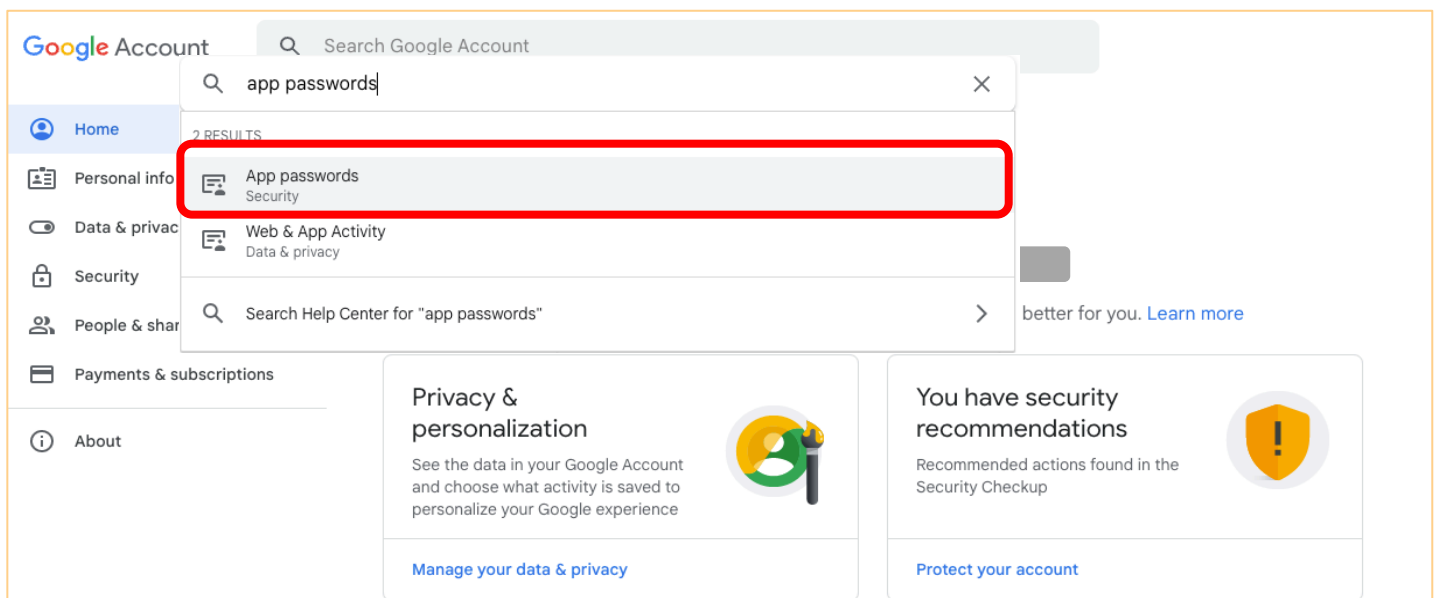
Below are the instructions on how to set it up.

1. Log in to your Gmail Account and access "Manage your Google Account."



2. On the search bar type in "App Passwords."

Note: Make sure that your 2-factor authenticator is enabled so that you can access the "App Passwords"



3. Once you click “App Passwords” you will see this pop up message. Just click “Select App” and choose “Other”

← App passwords

App passwords let you sign in to your Google Account from apps on devices that don't support 2-Step Verification. You'll only need to enter it once so you don't need to remember it. [Learn more](#)

You don't have any app passwords.

Select the app and device you want to generate the app password for.

Select app ▼ Select device ▼

Select app

- Mail
- Calendar
- Contacts
- YouTube
- Other (Custom name)**

GENERATE

4. After you choose “Other” you may type in the name of your device or any name you desire.
5. Once you put in the name of your device, you may now click “Generate” so that it will generate you a password that you need to save for later.

← App passwords

App passwords let you sign in to your Google Account from apps on devices that don't support 2-Step Verification. You'll only need to enter it once so you don't need to remember it. [Learn more](#)

You don't have any app passwords.

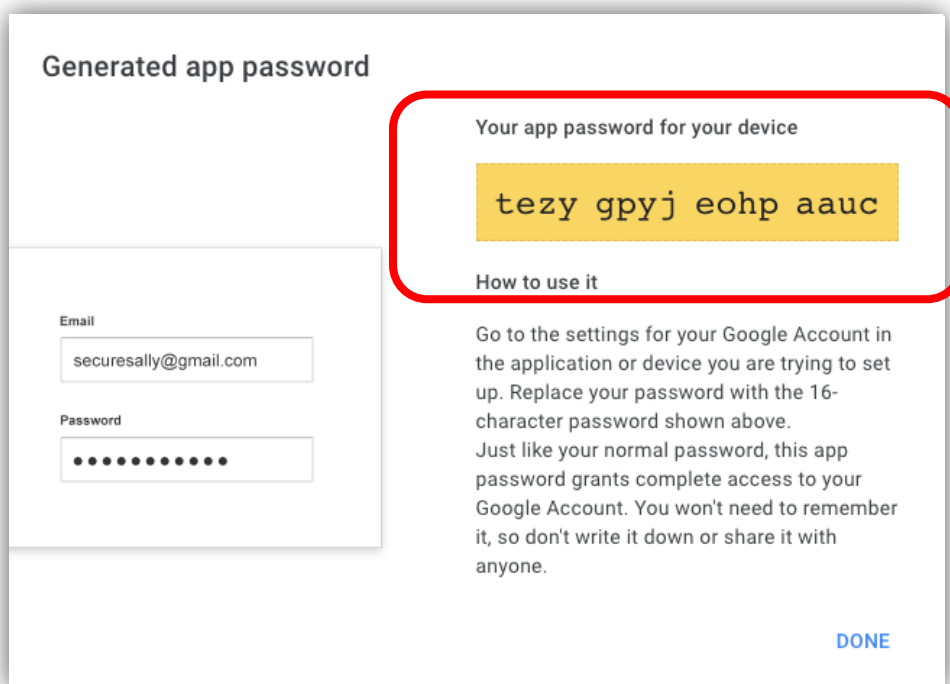
Select the app and device you want to generate the app password for.

Base Unit X

GENERATE

6. After you click “**Generate**” a pop message will appear. This is now your app password for your device.

Important: Make sure to copy and securely store this password in your notes for future reference. Once you close this pop-up message, the password will not be retrievable. In case you lose it, you will need to follow the same steps again to generate a new password.



Non-Secure Settings

SMTP Server: aspmx.l.google.com SMTP Port: 25

SMTP Authentication: **Off / Unchecked** From address: yourgmailname@gmail.com To address: same as from address

The emails will arrive in your SPAM filter unless you whitelist the IP address on Gmail from which you are sending the alerts.

For SSL, the settings will be:

SMTP Server: smtp.gmail.com SMTP Port: **465**

SMTP Use SSL: **Checked**

SMTP Authentication: **Checked**

SMTP Username/Password: **Filled out**

From/To address: Filled out. Not required to be the same.

For TLS, the settings will be:

SMTP Server: smtp.gmail.com SMTP Port: **587**

SMTP Use SSL: **UnChecked**

SMTP Authentication: **Checked**

SMTP Username/Password: **Filled out**

From/To address: Filled out. Not required to be the same.

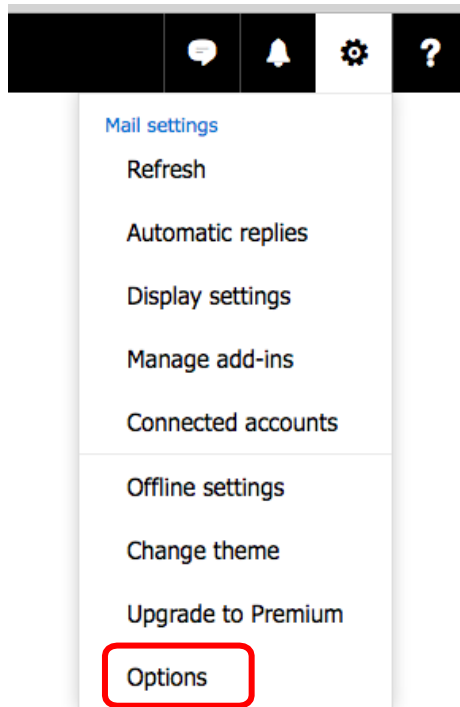
Note: Only version 5 Base Units are supported with Gmail's SSL ever since they offered RSA 2048-bit encryption.

4.2.2 Outlook mail as email server (<https://outlook.live.com>)

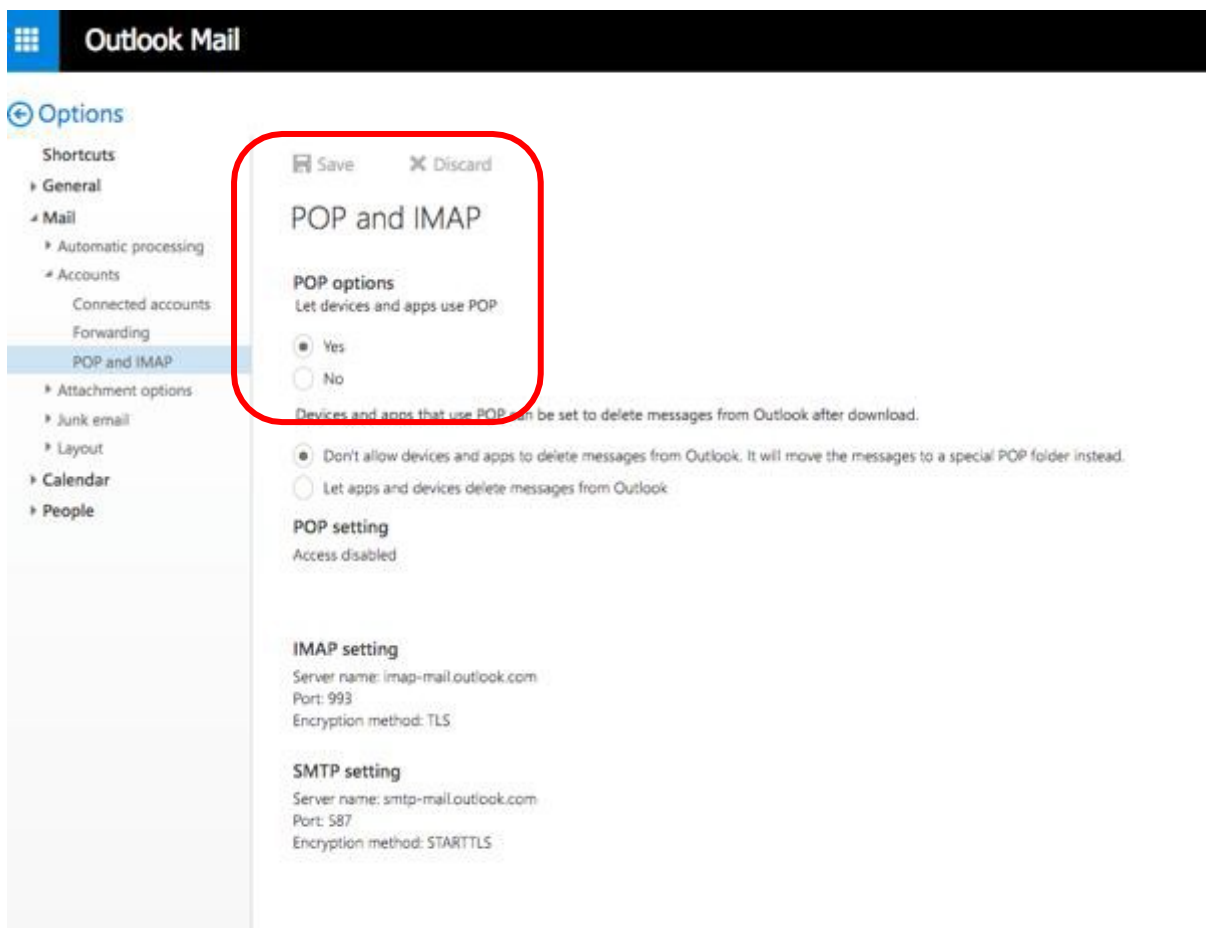
Outlook mail is another example of an SMTP server, which can be used on the gateway

However, you have to turn the option for “Let devices and apps use POP” to YES and then make sure you save it.

To do so just log in onto your account and click on the settings Icon beside your log-in name. Then choose options.



Then Click on “Mail” on the left panel to expand



Now choose YES under “let device and app use POP” and save it.

You can now set the gateway using the SMTP settings of outlook mail. For TLS, the settings will be:

SMTP Server: smtp-mail.outlook.com SMTP Port: **587**

SMTP Use SSL: **Unchecked** SMTP Authentication: **Checked**

SMTP Username/Password: **Filled out**

From/To address: Filled out. Not required to be the same.

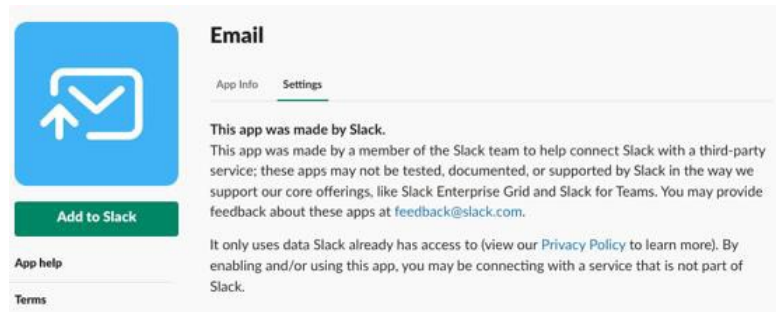
Note:

Check if your account allows User Consent to apps:

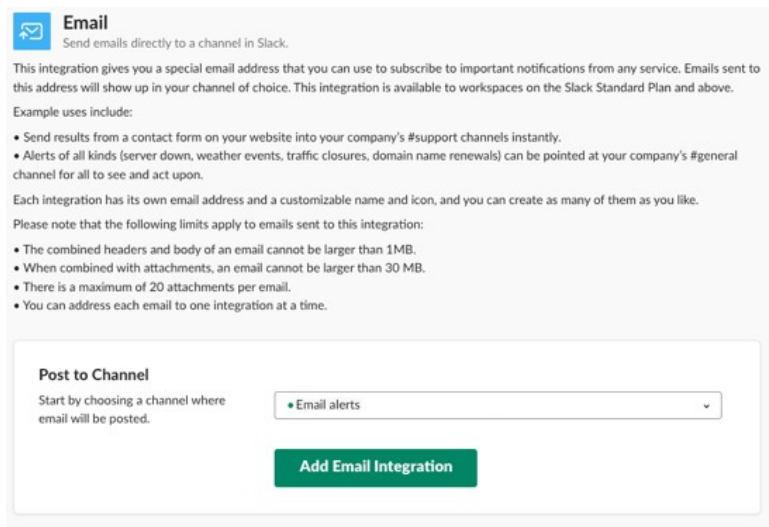
1. In the admin center, go to **Settings>OrgSettings>Services** page, and select **User Consent to apps**.
2. On the **User consent to apps**

4.3 Slack channel integration via e-mail alerts

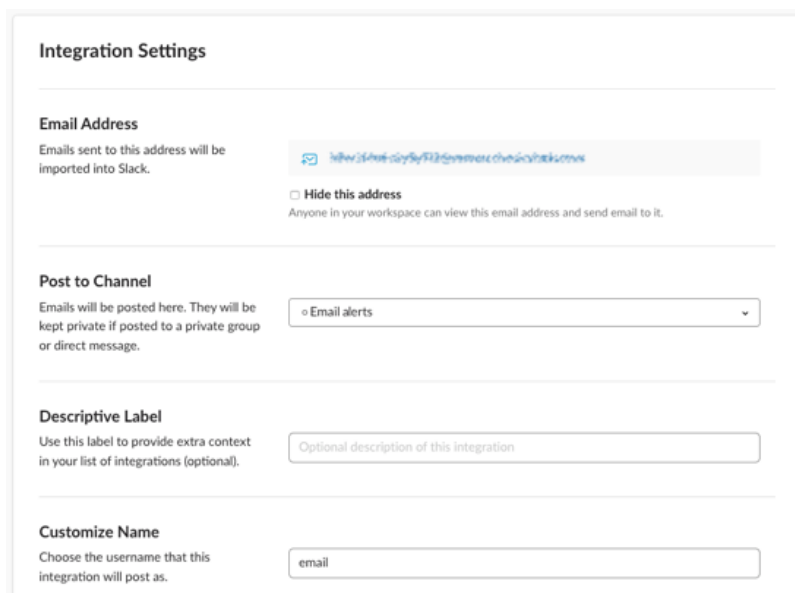
To receive alerts via slack we first need to have the email app integrated into our slack account



As shown on the image above we need to add the email app into our slack account.



Once we add the app you will be prompt to choose a channel where the alerts will be received



Once done you will then see the email address that you can use to receive alerts, you can place the email address on the "To" or "Cc" field see **section 4.1**.

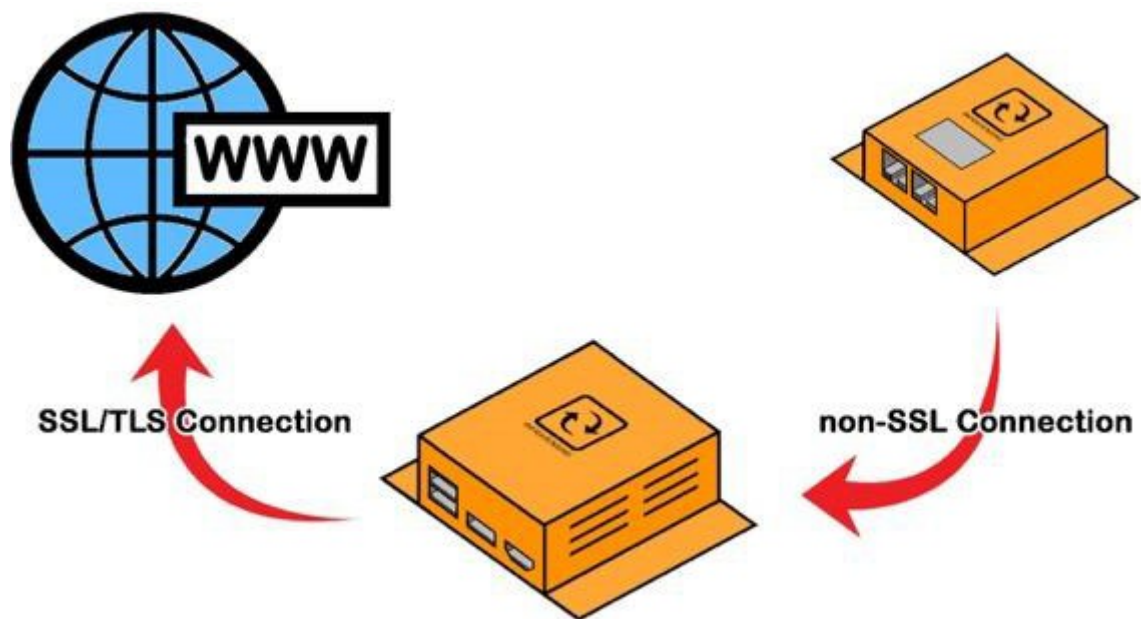
4.4 Tunneling an SSL connection

In this guide we will be using the STunnel software installed on our InfraSensing Monitoring Appliance.

You can use STunnel to allow non-SSL devices such as the Base Unit to connect to a secure mail server in which the Base Unit will connect to STunnel using non-SSL SMTP then STunnel will bridge the connection to for example Google Mail using an SSL connection.

Network Diagram

The Image below will show that the gateway sends via Non-SSL smtp connection going to the monitoring appliance, the data is then relayed using an SSL/TLS connection going to Gmail's smtp server.



How to do it:

1. Download and Install the STunnel Software (can be downloaded from: <http://www.stunnel.org/>)
2. During the installation

```
C:\Program Files (x86)\stunnel\bin\openssl.exe
WARNING: can't open config file: /devel/win32/openssl/openssl.cnf
Generating a 2048 bit RSA private key
.....+++
...+++
writing new private key to 'C:\Program Files (x86)\stunnel\config\stunnel.pem'
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [PL]:BE
State or Province Name (full name) [Mazovia Province]:Zaventem
Locality Name (eg, city) [Warsaw]:Leuvensesteenweg
Organization Name (eg, company) [Stunnel Developers]:ServersCheck
Organizational Unit Name (eg, section) [Provisional CA]:Application Support
Common Name (FQDN of your server) [localhost]:FoxHound
```

3. Access the config folder as shown in the image below and open stunnel.conf using a text editor.
Ex. Notepad, Notepad++

This PC > Windows (C:) > Program Files (x86) > stunnel > config				
☐ Name	Date modified	Type	Size	
☐ ca-certs.pem	07/06/2017 4:22 A...	PEM File	254 KB	
☐ openssl.cnf	17/01/2017 4:12 A...	CNF File	2 KB	
☒ stunnel.conf	28/01/2017 5:04 PM	CONF File	5 KB	
☐ stunnel.conf.old2	30/08/2017 5:55 PM	OLD2 File	1 KB	
☐ stunnel.pem	31/08/2017 5:20 PM	PEM File	4 KB	

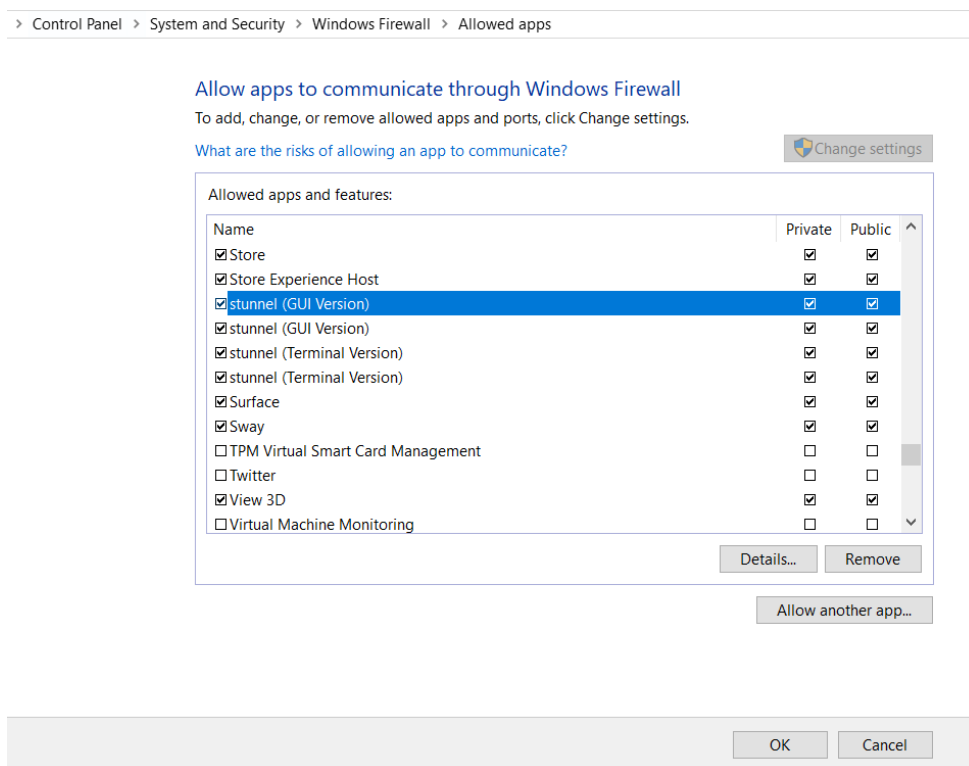
4. You should be able to see sample configuration commands. You can either edit the current or add the configuration below. Then save the file.

```
[gmail-pop3] client = yes accept = 110
connect = pop.gmail.com:995 verifyChain = yes
CAfile = ca-certs.pem checkHost = pop.gmail.com OCSPaia = yes
```

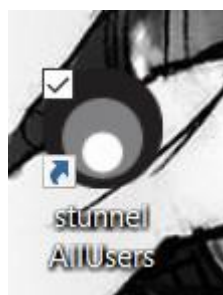
```
[gmail-imap] client = yes accept = 143
connect = imap.gmail.com:993 verifyChain = yes
CAfile = ca-certs.pem checkHost = imap.gmail.com OCSPaia = yes
```

```
[gmail-smtp] client = yes accept = 25
connect = smtp.gmail.com:465 verifyChain = yes
CAfile = ca-certs.pem checkHost = smtp.gmail.com OCSPaia = yes
```

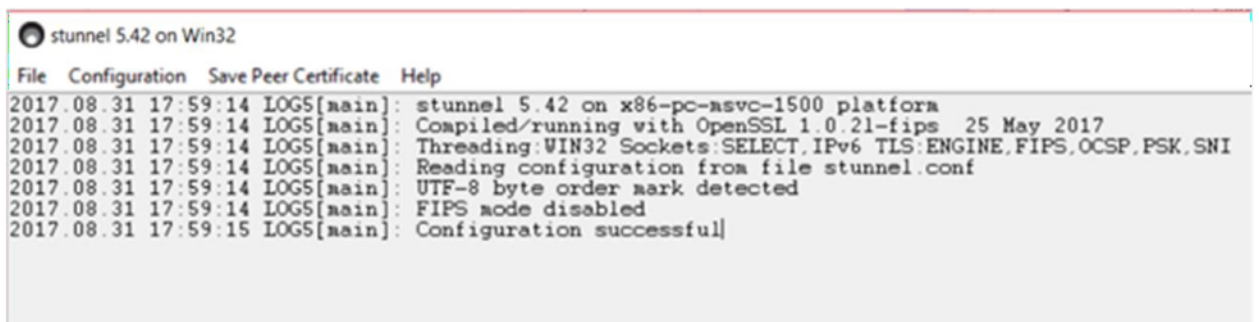
5. Make sure STunnel is added on your allowed application in the firewall list



6. Click on the desktop icon of the STunnel. You can also see and choose options on the Icon created on the system tray.

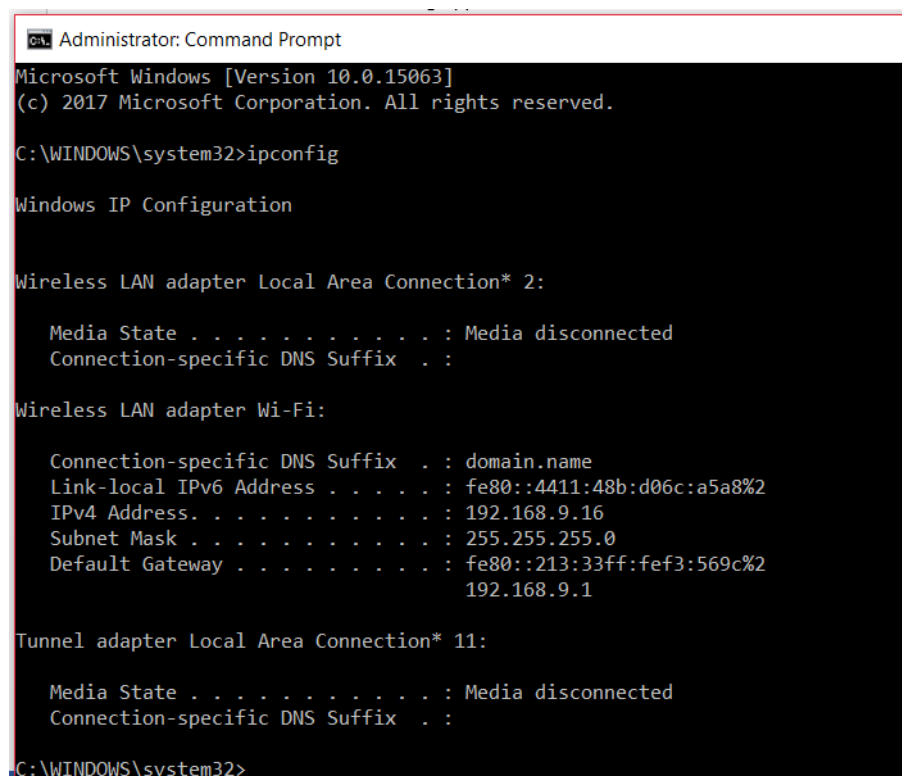


7. You should see a result like the image below once successful.



```
stunnel 5.42 on Win32
File Configuration Save Peer Certificate Help
2017.08.31 17:59:14 LOGS[main]: stunnel 5.42 on x86-pc-msvc-1500 platform
2017.08.31 17:59:14 LOGS[main]: Compiled/running with OpenSSL 1.0.2l-fips 25 May 2017
2017.08.31 17:59:14 LOGS[main]: Threading:WIN32 Sockets:SELECT,IPv6 TLS:ENGINE,FIPS,OCSP,PSK,SNI
2017.08.31 17:59:14 LOGS[main]: Reading configuration from file stunnel.conf
2017.08.31 17:59:14 LOGS[main]: UTF-8 byte order mark detected
2017.08.31 17:59:14 LOGS[main]: FIPS mode disabled
2017.08.31 17:59:15 LOGS[main]: Configuration successful
```

8. Check the IP address of the Appliance/Computer. In this example our Monitoring Appliance is at 192.168.9.16. (Note: One method to get the IP address of the Monitoring appliance is by opening a command prompt and typing in the command “ipconfig”)



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>ipconfig

Windows IP Configuration

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . : domain.name
    Link-local IPv6 Address . . . . . : fe80::4411:48b:d06c:a5a8%2
    IPv4 Address. . . . . : 192.168.9.16
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::213:33ff:fef3:569c%2
                                192.168.9.1

Tunnel adapter Local Area Connection* 11:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

C:\WINDOWS\system32>
```

9. Access your gateway and go to email alerts. Then configure as shown in the image. (**192.168.9.16** is the IP of the Monitoring Appliance where STunnel is installed)

Email Alert

Enable Email Alerts



SMTP Server

192.168.9.16

SMTP Port

25

SSL (v3)



Use SMTP Authentication



SMTP Username

test

SMTP Password

....

From Email

Manual@serverscheck.com

To Email

Customer@gmail.com

CC

We recommend the use of distribution group

Email Subject

Email Body

10. Then click on submit and check if the email was sent successfully.

4.5 Mail service like AuthSMTP.com

If you don't have a non-SSL mail server on your network and you don't want to use STunnel and you can't use Gmail because your operator blocks it, then we could recommend AuthSMTP.com which provides a solid SMTP relay service.

With AuthSMTP.com you can subscribe to use their relay servers on a port such as 2525 while using standard authentication (non-SSL).

More information on <http://www.authsmtp.com>

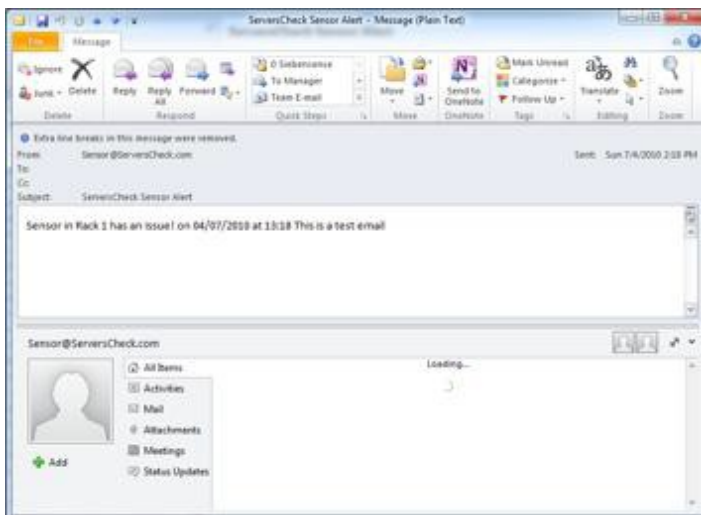
Note:

If you need to send alerts to multiple recipients, then the best option is to create a group in your mail server to send out the email alerts to multiple people.

In the email body we suggest to put in the location of the sensor. When you have multiple sensors, a user easily knows where to look for when receiving the alert.

When done click on the **Submit** button. It will now try to send a test message to the mail account.

Below is the test email as received in Outlook 2010.



4.6 SMS alerting from Base Unit

4.6.1 SMS Alerts via ADDON-LTE

SMTP Server

SMTP Port

Secure connection

Use SMTP Authentication

SMTP Username

SMTP Password

From Email

To Email(s)

Email Subject

Append to Email this text

ServersCheck Sensor Alert

Send test Email

Access the base unit and go to settings, under settings click on the Cellular Add-On button to access the configuration.

Note: The built in Premium SMS feature of the Base Unit will be disabled upon using the SMS functionality of the LTE addon

ADDON-LTE Config

Primary Mode

Backup Mode

SIM1 PIN

SIM1 APN

SIM1 Username

SIM1 Password

App on Status

Last Error

Network Status

Active SIM

Network Name

Signal Band

RSSI

RSE

SMS Recipients

Append to SMS this text

SMTP Server

SMTP Port

Secure connection

Use SMTP Authentication

SMTP Username

SMTP Password

From Email

To Email(s)

Email Subject

Append to Email this text

ServersCheck Sensor Alert

Send test Email

GPS Status

Fix

Satellites Found

Latitude

Longitude

Update

Reset

Enter the SIM information, if the SIM does not have a security PIN then leave it blank.

ADDON-LTE Config

Primary mode ☐ Backup mode ☒

SIM PIN SIM APN SIM Username SIM Password

Sim on Status Last Error Connected

Network Status Active SIM Network Name Signal Band RSSI (dB)

SMS Recipients Append to SMS this text

SMS Recipients

Append to SMS this text

Send test SMS

SMS Server SMS Port Secure connection

Use (SMS Authentication) SMS Username SMS Password

From Email To Email(s) Email Subject Append to Email this text

SMS Status TX Sublines Found Latitude Longitude

Update Reset

A maximum of 5 recipients can be added separated by a comma.

Update Reset

	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To	
☐	☐	☐	☒	☐	DISABLE	-
☐	☐	☐	☐	☐	DISABLE	-

Make sure that the SMS checkbox is ticked to receive alerts via SMS for the sensors you are monitoring.

4.6.2 SMS alerts via my.infrasensing premium credits

Requirements for SMS alerting:

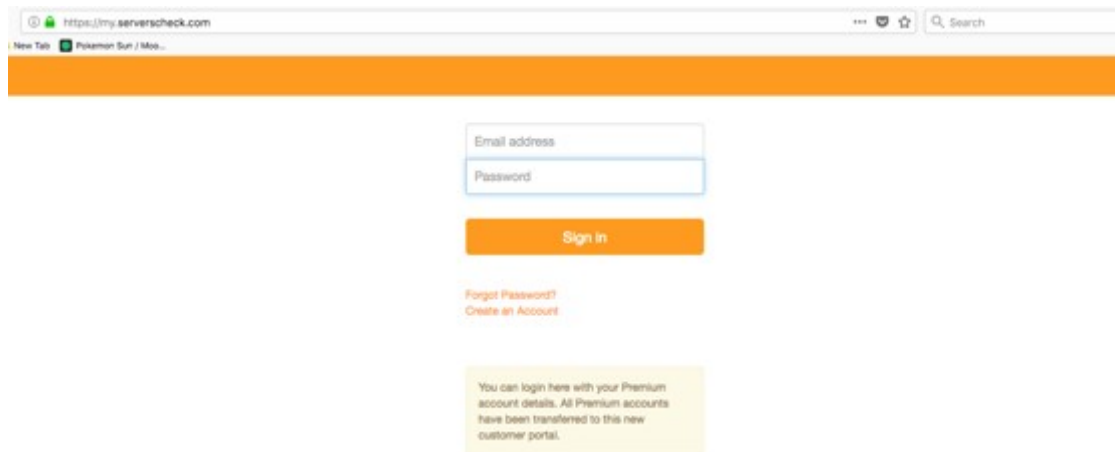
An active account created on <https://my.infrasensing.com>

Firmware 2.10 or higher on Base Units

Outbound communication on port 80 from Base Unit to Internet

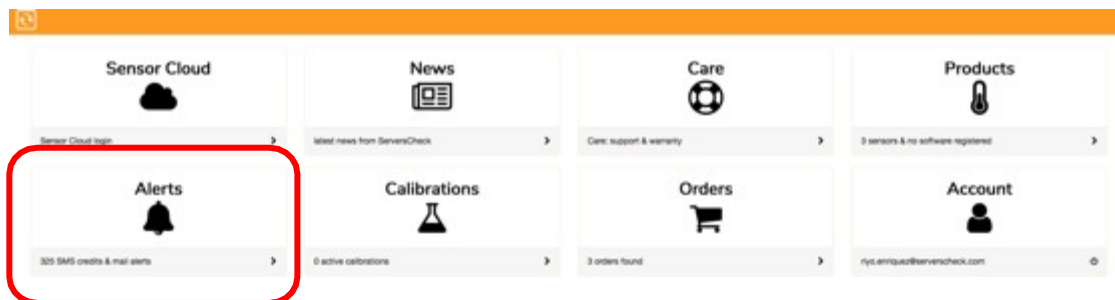
For SMS alerting, SMS messages are sent by InfraSensing's SMS Gateway. Base Units make a connection over TCP/IP with the SMS Gateway servers for delivering SMS messages.

As per above requirements you need to create an account first on <https://my.infrasensing.com>



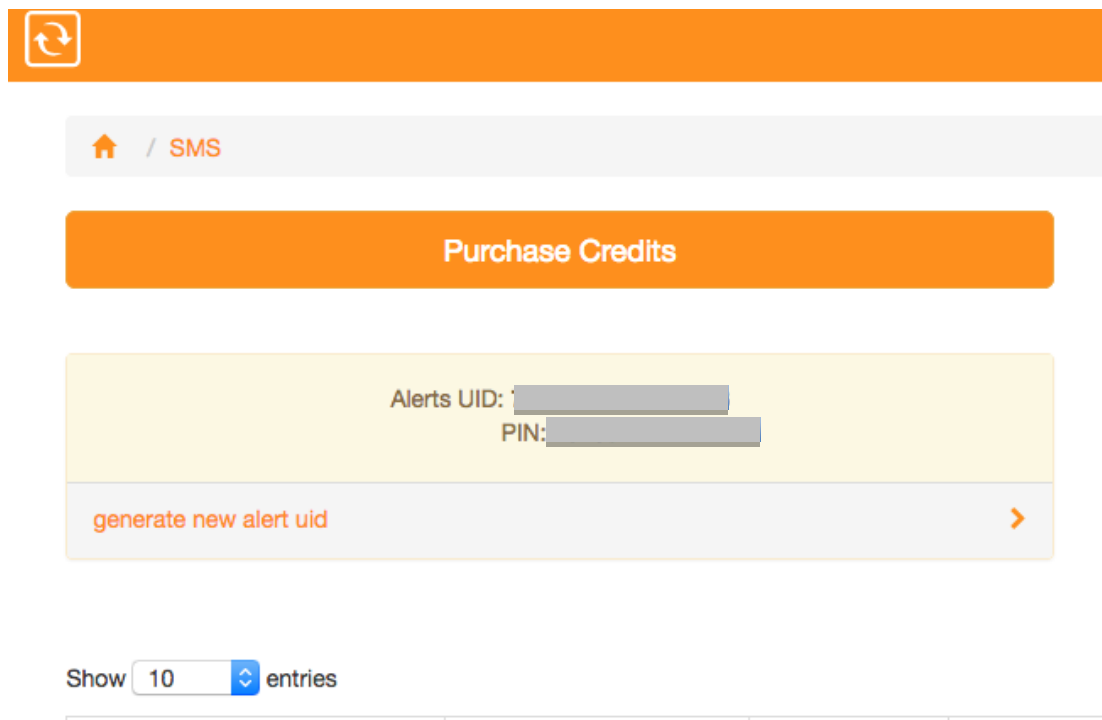
The screenshot shows a web browser window with the URL <https://my.serverscheck.com>. The page has a white background with an orange header bar. Below the header, there is a login form with two input fields: "Email address" and "Password". Below these fields is an orange "Sign in" button. Under the button, there are two links: "Forgot Password?" and "Create an Account". At the bottom of the form area, there is a yellow box with the text: "You can login here with your Premium account details. All Premium accounts have been transferred to this new customer portal."

When you have completed above steps to create your account, then you will receive an email with your username and temporary password to login.



Note: Premium Credits are required for the SMS & Voice feature, Credits can be purchased through your account.

To check for the configuration and remaining SMS/Voice Call Credit we need to click on the “Alerts” Icon and then “SMS” in the middle of your Home page.

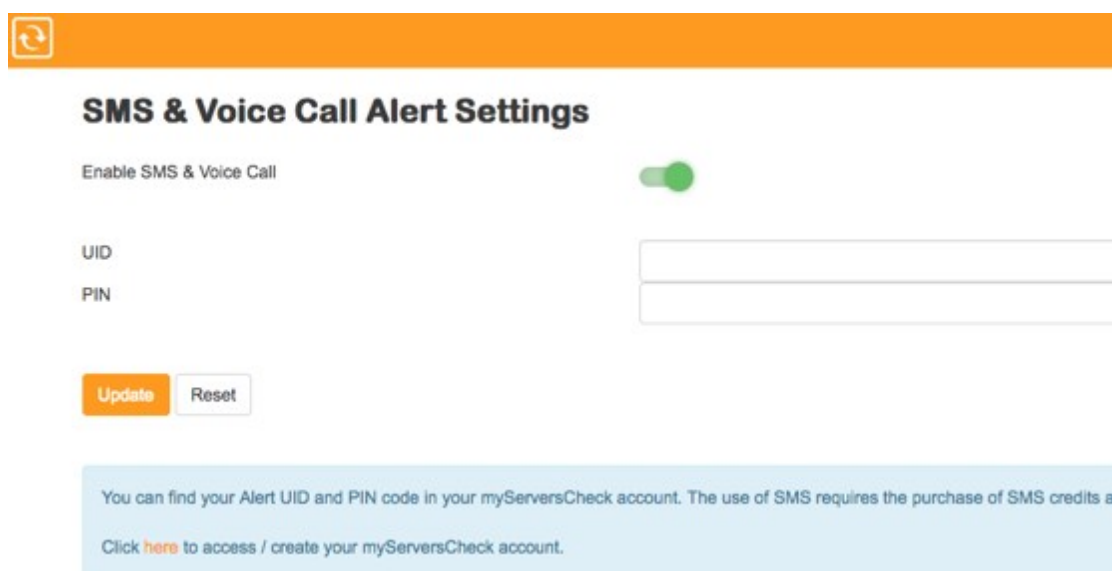


The screenshot shows a web interface with an orange header bar containing a refresh icon. Below the header is a breadcrumb trail: a home icon followed by "/ SMS". A large orange button labeled "Purchase Credits" is centered. Below this is a yellow box containing the text "Alerts UID:" followed by a greyed-out input field, and "PIN:" followed by another greyed-out input field. Below the yellow box is a light grey bar with the text "generate new alert uid" in orange and an orange arrow pointing right. At the bottom, there is a "Show" label, a dropdown menu set to "10", and the word "entries".

You need to note down the following configuration info: the **UID** and **PIN** codes. These have to be entered in the Base Unit in order to have the SMS alerting work. You may also Generate a new alert UID, should you wish to do so.

From the above personal page, you can check your SMS credits status, Upgrade into New Plans or check your SMS alerting history. You can also add additional SMS recipients if you want SMS alerts to be send to multiple mobile numbers.

Now connect to your Base Unit, click on the Menu button and go to settings then click on SMS



The screenshot shows a web interface with an orange header bar containing a refresh icon. Below the header is the title "SMS & Voice Call Alert Settings". Underneath is a toggle switch labeled "Enable SMS & Voice Call", which is currently turned on (green). Below the toggle are two input fields: "UID" and "PIN". Below these fields are two buttons: "Update" (orange) and "Reset" (white). At the bottom, there is a light blue box containing the text: "You can find your Alert UID and PIN code in your myServersCheck account. The use of SMS requires the purchase of SMS credits a" and "Click [here](#) to access / create your myServersCheck account."

Activate the **Enable SMS& Voice Call** option. Then enter the **UID** and **PIN** from your account page. Click on the **Submit** button and wait for an SMS test alert to be sent on your cell phone.

Didn't you receive the SMS test alert? Verify your network settings especially if the DNS server has been configured correctly in the **Network** menu settings. If the DNS server has been correctly defined then make sure that no firewall is blocking outgoing HTTP calls from the Base Unit to the InfraSensing SMS Gateway.

Update

Reset

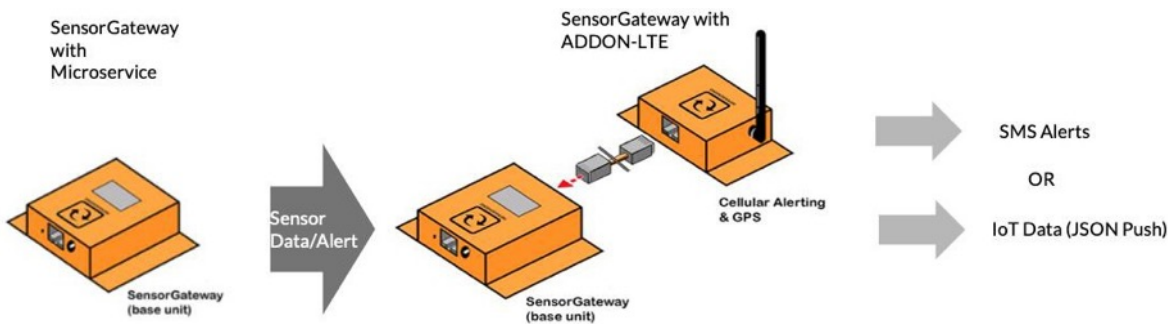
	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To	
	☐	☐	☒	☐	DISABLE	-
	☐	☐	☐	☐	DISABLE	-

Now click on the SMS checkbox to receive alerts via SMS for the item you are monitoring.

4.6.3 Sending SMS alerts and JSON Push data using the Microservice feature

Starting from Base Unit firmware 8.7, the Microservice feature of the Base Unit lets you send SMS alerts and JSON Push data through the ADDON-LTE of another Base Unit that is within the same network.

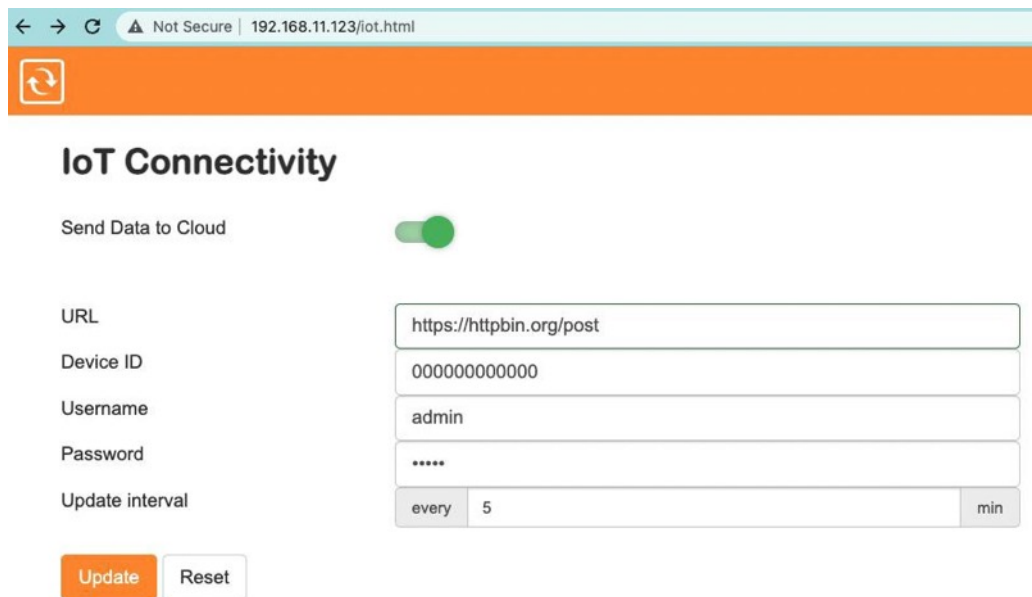
How the Microservice works



- Requirements:**
- Base Unit to use the feature
 - Base Unit with connected ADDON-LTE(with attached SIM card) to host the Microservice
 - Both Base Units must be on the same network

Setting up the host Base Unit

1. On the Web Interface of the Base Unit, go to the Menu > Settings > IoT. You should be able to see a window like this:



The screenshot shows a web browser window with the address bar displaying "192.168.11.123/iot.html". The page has an orange header with a refresh icon. The main content area is titled "IoT Connectivity". Below the title, there is a toggle switch for "Send Data to Cloud" which is currently turned on (green). Below this, there are five input fields: "URL" (containing "https://httpbin.org/post"), "Device ID" (containing "000000000000"), "Username" (containing "admin"), "Password" (containing "*****"), and "Update interval" (a dropdown menu showing "every" and "5" minutes). At the bottom of the form, there are two buttons: "Update" (orange) and "Reset" (grey).

2. Turn on Send Data to Cloud.
3. Fill in the following data:
 - a. URL that will receive JSON Push data
 - b. Device ID of the Base Unit (alphanumeric)
 - c. Username and Password
 - d. Update interval of the Base Unit to send data over the Microservice
4. After the details are entered, click Update.

Setting up the Base Unit that will use the Microservice

1. On the Web Interface of the Base Unit, go to Menu > Settings > Microservice.

Take note that the Microservice Settings button will only appear on Base Unit with firmware version 8.7 and up.

You should be able to see a window like this:

Microservice Settings

Send Alerts Through Microservice ☒

Microservice Gateway IP Address 192.168.11.123

IOT

Device ID 000000000000

Username admin

Password *****

Update interval every 5 min

IOT URL should be configured on the Microservice Gateway

Test SMS Recipients +639991234444

SMS recipients should be configured on the Microservice Gateway

Test SMS Text test message

Send Test SMS

Update Reset

2. Turn on the Send Alerts Through Microservice.
3. Fill in the following data:
 - a. The Microservice Gateway IP Address (host IP Address)
 - b. Device ID of the host Base Unit
 - c. Username and Password of the host
 - d. Update interval
4. Click Update.

Disclaimer:

If you experience issues while using the microservice, they may be due to network-related factors. Please consult your network engineer for support, as connectivity or configuration problems are beyond the scope of the microservice.

Sending Test SMS for Microservice

← → ↻ ⚠ Not Secure | 192.168.11.122/microservice.html



Microservice Settings

Send Alerts Through Microservice ☒

Microservice Gateway IP Address

Device ID

Username

Password

Update interval

IOT URL should be configured on the Microservice Gateway

Test SMS Recipients

SMS recipients should be configured on the Microservice Gateway

Test SMS Text

1. On the Microservice Settings, fill in the mobile numbers for the Test SMS Recipients.
2. Input the Test SMS Text that the recipients should receive.
3. Click **Send Text SMS**.

4.7 Voice call alerts

Aside from SMS messages, InfraSensing also offers voice calls as an alert by using text-to- speech technology. This feature could be utilized to monitor your mission-critical environments and/or devices. It works by dialing the recipient's number then informing him/her of the error message.

Voice call alerts are configured on the SMS portal and can be used by purchasing the same credits used for your SMS alerts.

To get started, add a new recipient by proceeding to the “Manage Numbers” page of the SMS portal. From there, as seen on the screenshot below, you’ll have to choose the alert type for the new recipient which can be for SMS, voice call, or both.

Home / Alert+ / Registered Recipient

Add Recipient

The number was deleted from the database.

Show 10 entries Search:

Contact	Alert Type	Description	Status	Actions
+639176203877	SMS	Anj	Active	

Showing 1 to 1 of 1 entries Previous 1 Next

Fill in the required fields

Home / Alert+ / Registered Recipients / Add Mobile Number

Add a new recipient

Notification type

✓ Select a notification type

- SMS Alerts
- Voice Call Alerts
- WhatsApp Alerts (Beta)
- Email Alerts (Beta)

Description

Example: Mike Phone

Submit

Alert pricing:

- 1 credit per SMS sent
- 3 credits per voice call
- 0.3 credits per Whatsapp message
- 0.1 credits per email message

Then select “Voice” or “SMS and Voice”

After which, you'll have to verify the added number by clicking the "Activation Pending" link as seen below.

Number	Alert Type	Description	Status	Actions
	SH-VOICE		Activation Pending	edit delete
	VOICE		Active	edit delete

Once activated, we'll have to go the Base Unit's web page to specify the sensors where you want the voice call alert to be used. In order to do so, make sure the SMS and Voice Call alert option on the Settings page is ticked.

UpdateReset

	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To	
	☐	☐	☒	☐	DISABLE	-
	☐	☐	☐	☐	DISABLE	-

Depending on the active recipients on the SMS portal, each time the specified sensor sends an alert, you will receive an SMS and/or voice call alert(s). If the active recipient(s) is only enabled for SMS, then you'll only be receiving an SMS alert. Other options are voice only, or both SMS and voice.

4.8 Retest before alarm

Retest before alarm is one of the newest features that verifies alerts to prevent false alarms before triggering a genuine one. This feature also empowers you to specify the number of checks before initiating a real alarm.

To adjust how times the alarm will be checked, navigate to 'Settings' and under 'General Settings', locate 'Retest Before Alarm'. By default, it is set to zero (0), but you can modify it by typing the desired number or using the up and down arrow buttons.

The screenshot displays the 'General settings' configuration page. The 'Retest Before Alarm' field is highlighted with a red rectangular box and contains the value '3'. An orange arrow points from the 'Update' button at the bottom left towards this field. Other settings visible include 'Device Name' (SensorGateway), 'Device Location' (Data Center), 'Sensor Polling' (every 1 sec), 'Temperature Unit' (Celsius), 'OLED Screen' (Enable), 'Repeat Alarm Time' (every 5 min), and 'Web Server' (Enable). At the bottom, there are three buttons: 'Update' (orange), 'Reboot' (red), and 'Legal Info' (blue).

General settings	
Device Name	SensorGateway
Device Location	Data Center
Sensor Polling	every 1 sec
Temperature Unit	Celsius
OLED Screen	Enable
Repeat Alarm Time	every 5 min
Retest Before Alarm	3 times
Web Server	Enable

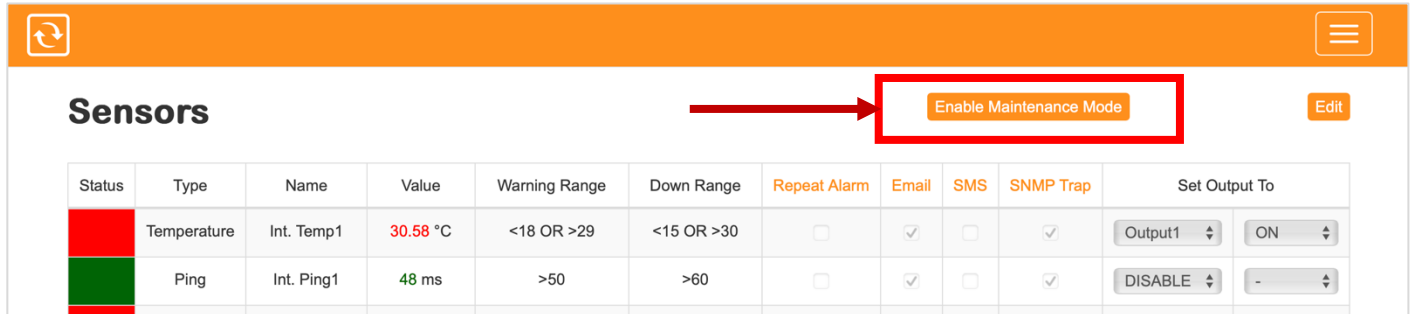
Update Reboot Legal Info

Once you input your desired number you may now click on update to apply the changes.

4.9 Maintenance Mode

Maintenance Mode is one of the newest features that can be found in the latest firmware version 9.1.

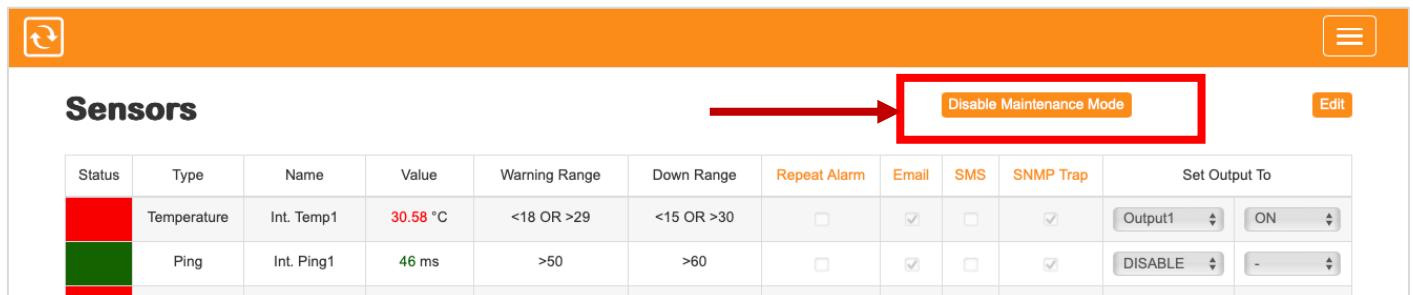
Enabling the Maintenance Mode allows you to configure the sensors without triggering any alerts, even when the alerting is enabled. In order to enable this feature, just click on the button "Enable Maintenance mode". Please see image below for reference.



The screenshot shows the 'Sensors' configuration page. At the top right, there is a red box around the 'Enable Maintenance Mode' button, with a red arrow pointing to it from the left. Below the header, there is a table with sensor data and configuration options.

Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To	
	Temperature	Int. Temp1	30.58 °C	<18 OR >29	<15 OR >30	☐	☒	☐	☒	Output1 ▾	ON ▾
	Ping	Int. Ping1	48 ms	>50	>60	☐	☒	☐	☒	DISABLE ▾	- ▾

Once you click "Enable Maintenance Mode," it will change to "Disable Maintenance Mode." To deactivate it, simply click again.

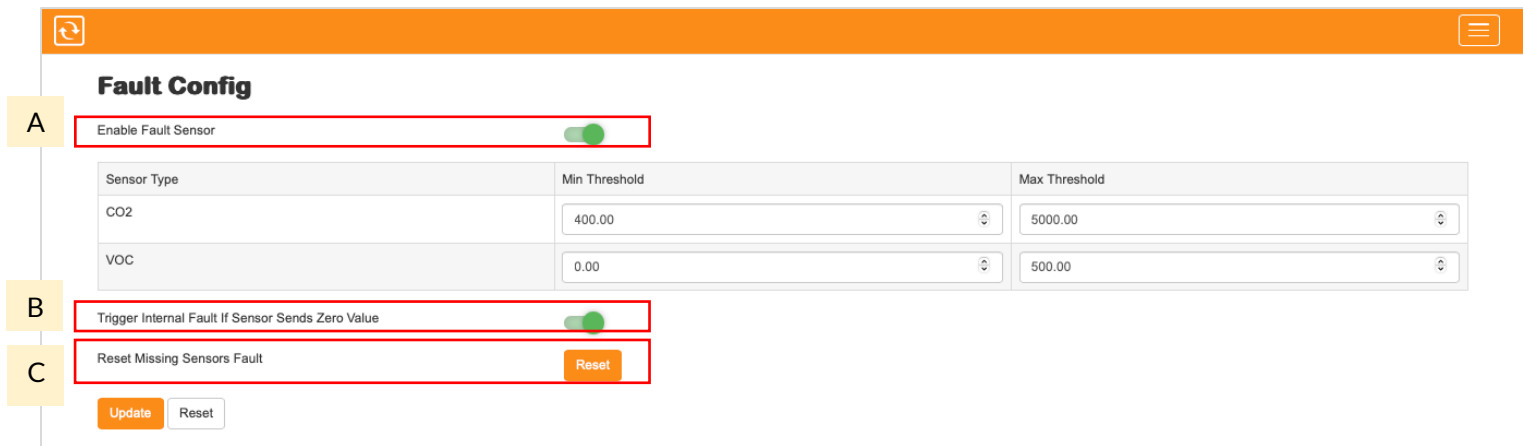
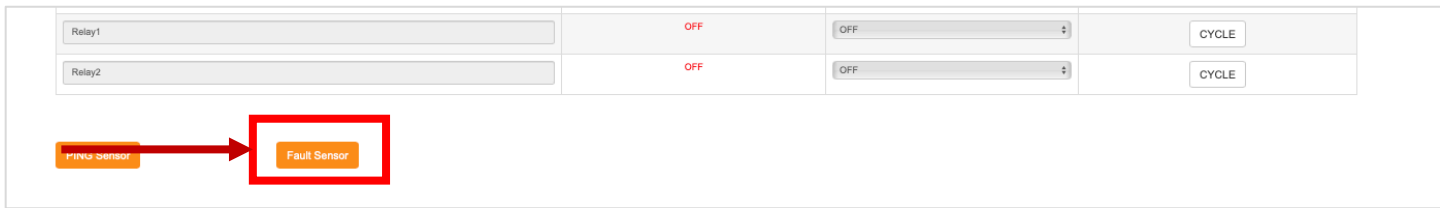


The screenshot shows the 'Sensors' configuration page after the button has been clicked. The button now says 'Disable Maintenance Mode' and is highlighted with a red box and a red arrow pointing to it from the left. The table below remains the same.

Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To	
	Temperature	Int. Temp1	30.58 °C	<18 OR >29	<15 OR >30	☐	☒	☐	☒	Output1 ▾	ON ▾
	Ping	Int. Ping1	46 ms	>50	>60	☐	☒	☐	☒	DISABLE ▾	- ▾

4.10 Fault Sensor

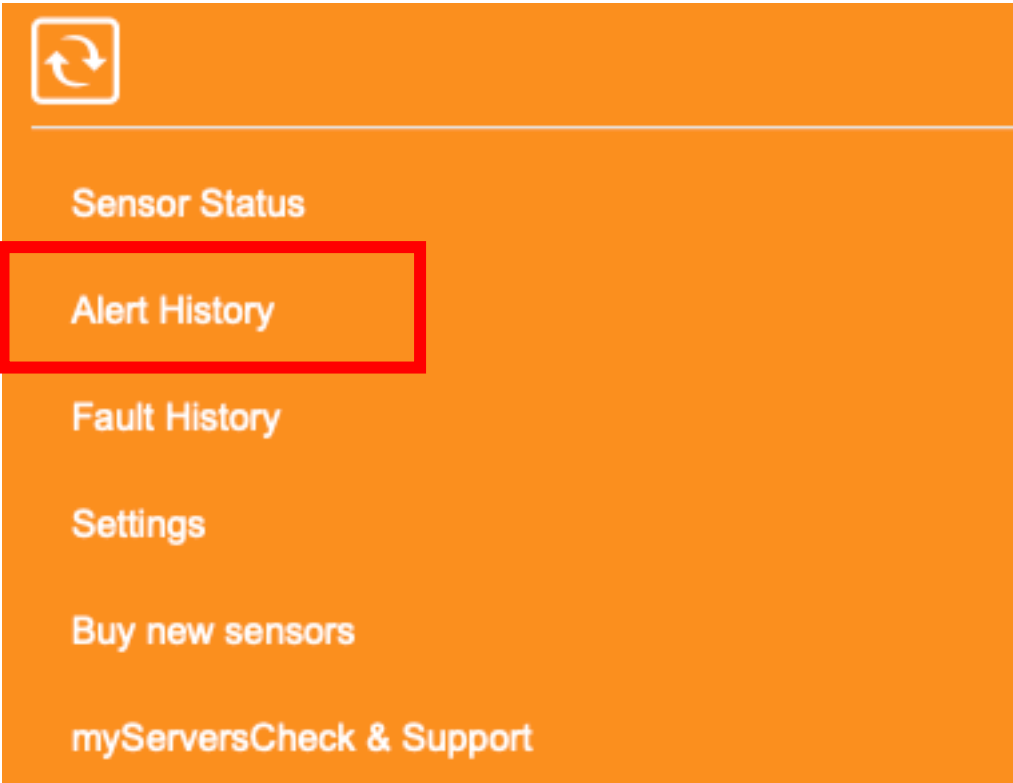
Fault Sensor is one of the newest features that can also be found in the latest firmware version 9.1. Whenever this feature is enabled, by default it will trigger an alert when a sensor gets disconnected. Also, it will send an alert if a sensor sends a zero value. In order to configure this feature, click on the Fault Sensor button at the bottom of the page, please refer to the image below.



- A. Enable Fault Sensor – When this feature is enabled, it will send out an alert whenever a sensor gets disconnected.
- B. Trigger internal Fault if Sensor Sends Zero Value – Enabling this feature will generate an alert whenever a sensor transmit a zero value.
- C. Reset Missing Sensors Fault – This option enables you to reset Fault alerts triggered by missing sensors.

5 History

5.1 Alert History



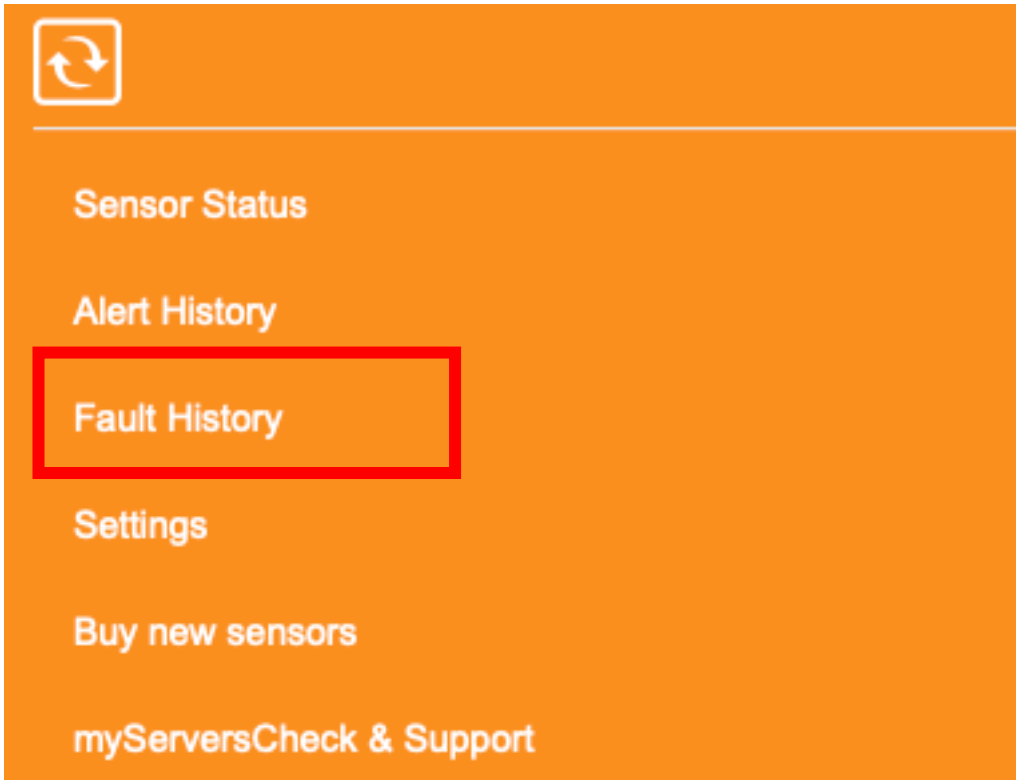
Each time a threshold is hit, an entry is automatically recorded on the log. And as seen on the screenshot, recovery alerts are also included. The Base Unit is able to store up to 2048 entries and are downloadable in CSV format. On column F of the CSV file, the following legend is used for the alerts - 0:Recovery; 1:Warning; 2:Down.

Alert History

Download as csv

2019/02/13 05:30:10	Recover	WT-0221	28.68
2019/02/13 05:29:09	Down	WT-0221	29.06
2019/02/13 05:24:08	Recover	WT-0221	28.87
2019/02/13 05:23:08	Down	WT-0221	29.12
2019/02/13 05:20:06	Recover	WT-0221	28.93
2019/02/13 05:18:06	Down	WT-0221	29.12
2019/02/13 05:16:05	Recover	WT-0221	28.87
2019/02/13 05:15:05	Down	WT-0221	29.18
2019/02/13 05:14:05	Recover	WT-0221	29.00
2019/02/13 05:05:01	Down	WT-0221	29.12
2019/02/13 03:01:40	Warning	WT-0221	26.00
2019/02/13 02:52:55	Recover	Ext. Temp2	24.82
2019/02/13 02:52:53	Warning	Ext. Temp2	25.60
2019/02/13 02:12:53	Recover	Ext. Temp2	22.74
2019/02/13 02:12:52	Warning	Ext. Temp2	25.64
2019/02/13 02:11:53	Recover	Ext. Temp2	23.07
2019/02/13 02:11:50	Warning	Ext. Temp2	27.75
2019/02/13 02:05:50	Recover	Ext. Temp2	24.82
2019/02/13 02:05:35	Warning	Ext. Temp2	27.15
2019/02/13 02:04:50	Recover	Ext. Temp2	24.78
2019/02/13 02:03:30	Down	Ext. Temp2	32.16

5.2 Fault History



Each time a Fault is triggered; an entry is automatically recorded on the log. This can also be downloaded as csv.

Fault Alert History

Download as csv

2024/02/21 19:40:42	Fault	Hub Port 7	Probe Missing	Triggered
2024/02/21 19:40:37	Fault	Hub Port 8	Probe Missing	Triggered
2024/02/21 19:39:12	OK	Particle1	CO2/VOC Limit	Recovered
2024/02/21 17:59:40	Fault	Hub Port 4	Probe Missing	Recovered
2024/02/21 17:50:26	Fault	Hub Port 4	Probe Missing	Triggered
2024/02/21 16:49:37	Fault	VOC Sensor1	CO2/VOC Limit	Triggered
2024/02/21 16:48:21	Fault	VOC Sensor1	CO2/VOC Limit	Triggered
2024/02/21 15:11:20	Fault	VOC Sensor1	CO2/VOC Limit	Triggered
2024/02/21 15:09:08	Fault	VOC Sensor1	CO2/VOC Limit	Triggered
2024/02/21 14:34:11	Fault	Hub Port 3	Probe Missing	Triggered
2024/02/21 14:33:20	Fault	VOC Sensor1	CO2/VOC Limit	Triggered
2024/02/21 14:33:16	Fault	Hub Port 7	Probe Missing	Triggered
2024/02/21 13:24:07	Fault	Port 2	Probe Missing	Triggered
2024/02/21 13:21:13	Fault	Port 2	Probe Missing	Triggered
2024/02/21 13:21:11	Fault	Port 1	Probe Missing	Triggered
2024/02/21 12:44:32	Fault	Port 2	Probe Missing	Triggered
2024/02/21 12:39:01	Fault	Hub Port 7	Probe Missing	Triggered
2024/02/21 12:39:01	Fault	Hub Port 6	Probe Missing	Triggered
2024/02/21 12:39:01	Fault	Hub Port 5	Probe Missing	Triggered
2024/02/21 12:39:01	Fault	Hub Port 3	Probe Missing	Triggered
2024/02/21 12:39:01	Fault	Hub Port 1	Probe Missing	Triggered
2024/02/21 12:39:01	Fault	Hub Port 4	Probe Missing	Triggered

6 Configuring the Base Unit for SNMP

In this section we are going to explain how the InfraSensing sensors can interact with SNMP enabled management systems.

The Base Unit supports 2 kinds of SNMP messages:

- **Pulling:** a network management system's requests status for the sensors through SNMP get requests
- **Pushing:** the Base Unit pushing SNMP notifications (called SNMP Traps) to network or building management systems

To illustrate SNMP, we will use the free (for personal use) SNMP Browser from iReasoning which is available from the following URL: <http://ireasoning.com/mibbrowser.shtml>

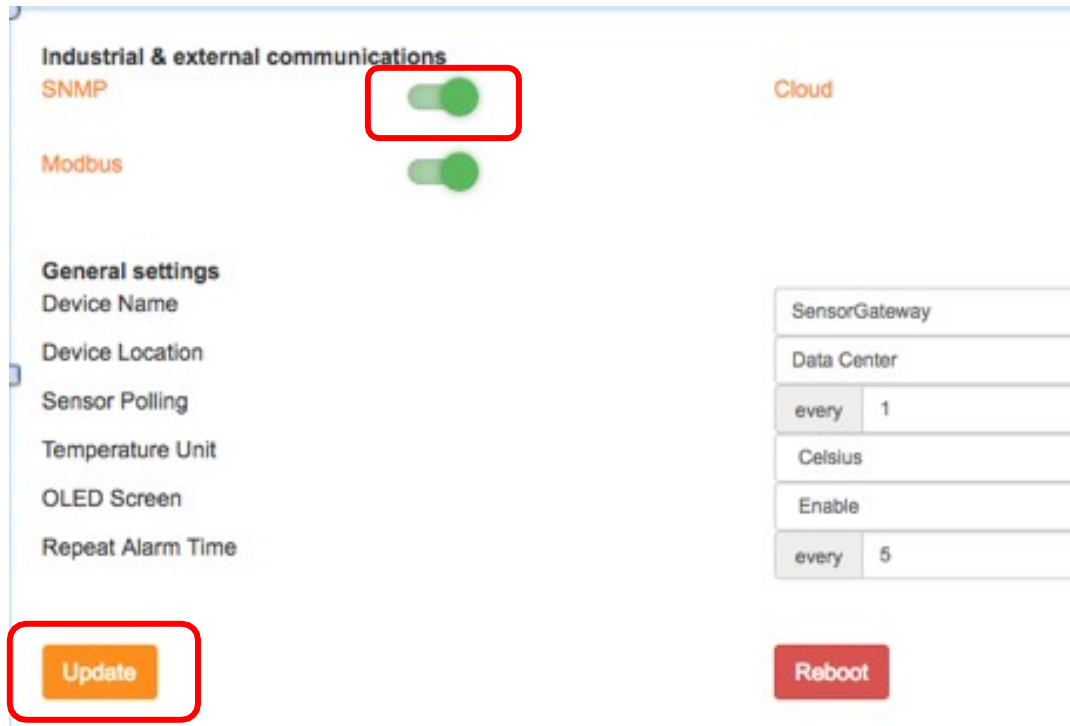
6.1 SNMP get requests

In the Base Unit the built-in SNMP agent needs to be enabled to allow for querying of the sensor by external applications using the SNMP GET protocol.

The Base Unit has its own MIB file, which can be downloaded here:

<http://downloads.infrasensing.com/sensors/Base Unit.mib>

1. To enable SNMP, connect to the Base Unit, Click on the menu button and go to settings and then under industrial and external communications *toggle on "SNMP"* and click *Update*.



Community string is limited to 16 characters.

2. You need now to enable the **SNMP Agent**. Click on *SNMP* to proceed to the SNMP settings.



3. On the SNMP Settings, click on the *SNMP Agent* toggle and enter the *Port* number to be used (default port for this UDP is 161 for Windows OS and 5555 for MAC OS). If you want to use a different community string, then you can change the value up to 16 characters. Default value for a read community is typically *public*, and *private* for write community.

4. Select the SNMP Version (SNMPv2 or SNMPv3). Refer to the illustration for settings of each version:

SNMP Agent

SNMP Agent ☒

Port 161

Version SNMPv2

SNMP Read Community public

SNMP Write Community private

SNMP settings for v2

SNMP Agent

SNMP Agent ☒

Port 161

Version SNMPv3

SNMP Read Community public

SNMP Write Community private

Username Serverscheck

Auth Key auth12345

Protocol MD5

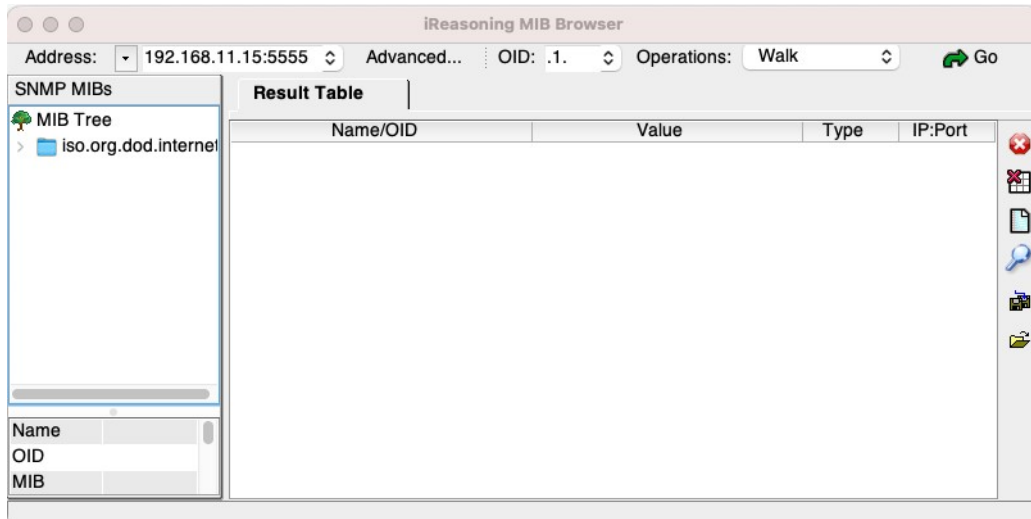
Privacy Key priv12345

Protocol AES

Note. On v3, additional settings will appear. Select a username, then select MD5 and AES for the 1st and 2nd Protocol respectively, and enter an Auth Key and Privacy Key.

5. After all the SNMP settings are done, click *Update*.

- Now let's proceed to opening the iReasoning MIB Browser.



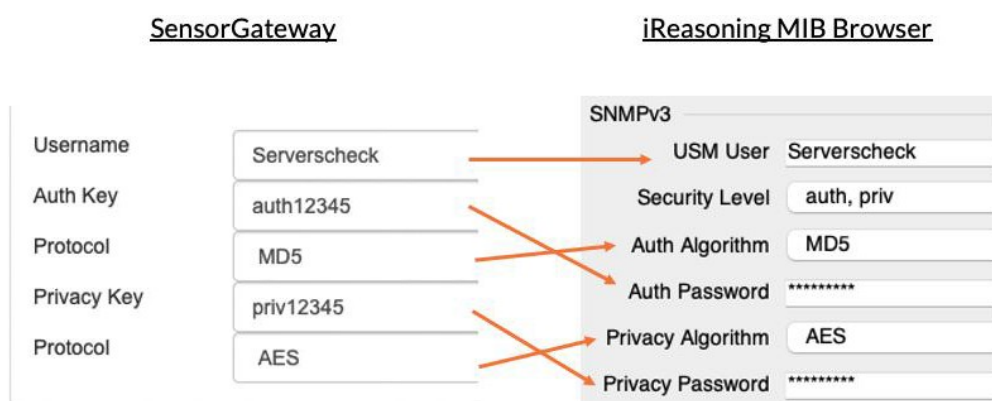
iReasoning MIB Browser main screen

- Set the Address field to the IP address of your Base Unit.



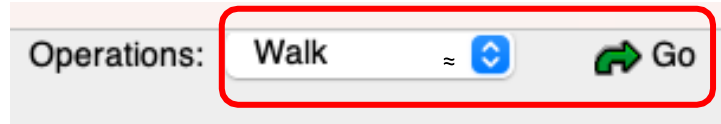
- Next, click **Advanced** to go to the advanced properties of the SNMP agent.
- In the Advanced Properties window, enter the following details:
 - IP Address of the Base Unit
 - Copy details from the SNMP settings of the Base Unit such as Read and Write Community string, and Port number
- Select the SNMP version (2 or 3)

Note. When SNMP Version 3 is selected, there will be additional settings to fill out. For the *Security Level*, select *auth, priv* then for the rest, copy from the SNMP settings of the Base Unit.

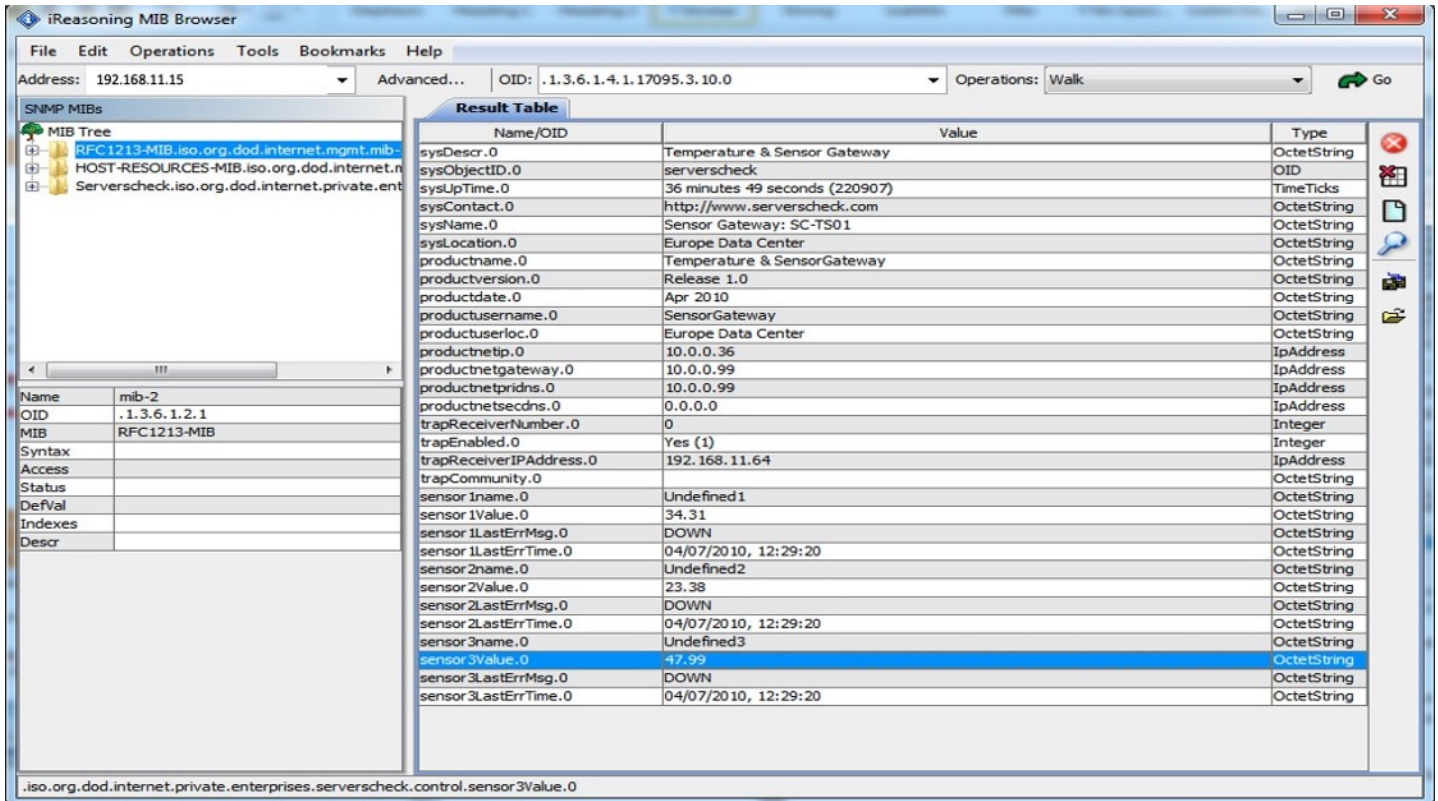


For the remaining settings of SNMPv3, leave it blank and it will later have values after it has undergone the SNMP Walk operation.

11. After the SNMP v2 or v3 settings are entered, click OK.
12. Go to the main screen and perform SNMP walk by selecting *Walk* on Operations and then click *Go*.



13. The image below shows the example output of the SNMP walk.



In the above screen copy you see all the SNMP parameters as made available by the InfraSensing Base Unit.

At the bottom you will see the values of the internal temperature sensor connected to the appliance (**sensor1Value.O**) and then of the values returned by external sensor probes connected to it.

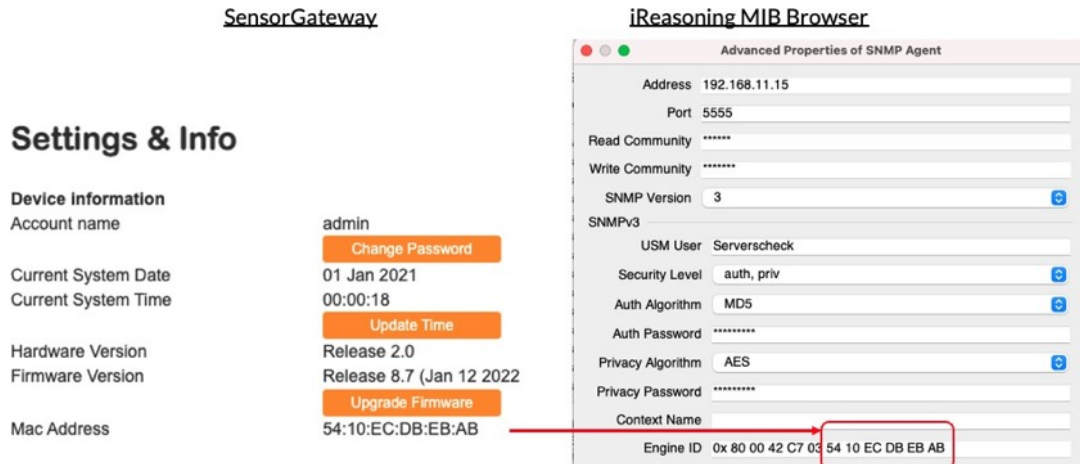
In this example we added an external temperature & humidity probe to it. By clicking on a field, you can see the matching OID for that field at the top. In above example the OID for the humidity reading is **.1.3.6.1.4.1.17095.3.10.0**

Note: for Firmware 7.5 and above a new OID structure is implemented which would have sensor values as String and Integer. The update will not affect the OLD OID structure and can still be used.

Below is an Example of the new structure added on top of our current structure.

1.3.6.1.4.1.17095.10.10.10.3.0	25.62	OctetString	192.168.11....
1.3.6.1.4.1.17095.10.10.10.4.0	25	Integer	192.168.11....
1.3.6.1.4.1.17095.10.10.10.5.0	WARNING	OctetString	192.168.11....
1.3.6.1.4.1.17095.10.10.10.6.0	1	Integer	192.168.11....
1.3.6.1.4.1.17095.10.10.10.7.0	WARNING	OctetString	192.168.11....
1.3.6.1.4.1.17095.10.10.10.8.0	05 July 2018, 14:49:47	OctetString	192.168.11....

Note. After the walk operation, the SNMPv3 advanced properties(Engine ID, Localized Auth Key and Localized Priv Key) will have values. The engine ID is composed of the initial default value and followed by the MAC Address of the Base Unit. It can be seen by looking into the Main Settings of the gateway.



IMPORTANT NOTE:

In any cases you encounter or experience where the OID changes whenever a sensor is unplugged please note that this is because you are using an OLD SNMP structure.

With the introduction of the new structure, the SNMP OIDs will remain fixed and will not change whenever a sensor is unplugged.

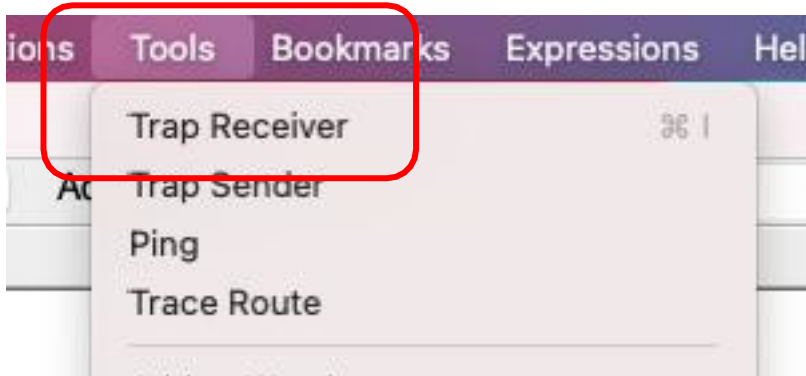
The OID for the new structure starts with **.1.3.6.1.4.1.17095.8.1.1.0** and ends with **.1.3.6.1.4.1.17095.8.50.9.0**.

If you have recently updated your firmware to version 9.2, please perform an SNMP WALK to check the OIDs for the Sound Meter and Pressure sensor on the new structure.

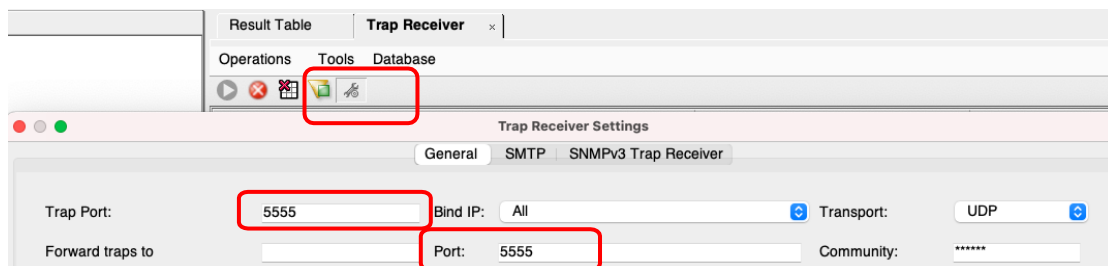
6.2 SNMP traps

When threshold values are exceeded or on failure (water detection or power failure), the Base Unit can send out SNMP Traps to network management systems.

1. On our system we have installed the iReasoning MIB Browser. Go to **Tools > Trap Receiver**



2. In the Trap Receiver, click on the Tools button for SNMP Trap settings. Set the Trap Receiver Port. This is the UDP port used by the SNMP Trap Receiver to receive incoming messages. In our example we set it to 5555.



For SNMPv3, additional settings should be added by going to the *SNMPv3 Trap Receiver* tab and then click *Add*, the Add SNMPv3 Parameters will show, then copy the SNMPv3 settings from the Base Unit to the iReasoning MIB Add SNMPv3 Parameters. After that, click *Ok*.

The image shows two overlapping windows from a software interface. The background window is titled 'Trap Receiver' and has tabs for 'General', 'SMTP', and 'SNMPv3 Trap Receiver'. The 'SNMPv3 Trap Receiver' tab is active, showing fields for 'Auth Protocol', 'Auth Password', 'Priv Protocol', and 'Priv Password'. Overlaid on top of this is a smaller dialog box titled 'Add SNMPv3 Parameters'. This dialog box contains the following fields: 'Username' (set to 'Serverscheck'), 'Authentication Protocol' (set to 'MD5'), 'Authentication Password' (masked with asterisks), 'Privacy Protocol' (set to 'AES'), 'Privacy Password' (masked with asterisks), and 'Security Level' (set to 'auth, priv'). At the bottom of the dialog are 'Ok' and 'Cancel' buttons. Below the dialog box, there is a separate row of buttons: 'Add', 'Delete', 'OK', and 'Cancel'.

The iReasoning is now ready to receive SNMP Trap alerts from the Base Unit.

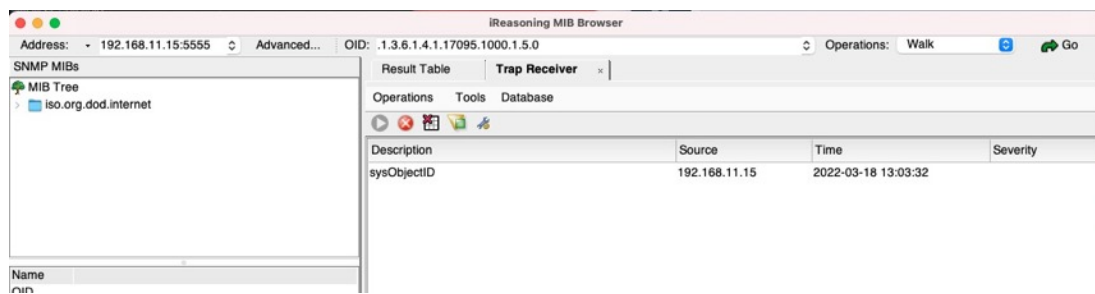
3. Go back to the Base Unit to set the SNMP Trap Alerts by:
 - a. Click on the Enable 1st Trap Receiver
 Note: With the firmware version 7.40 and above you can have up to 2 trap receivers meaning you can install iReasoning or any trap receiver on any two computers and have the gateway send trap alerts on both.
 - b. Define the IP address of the system on which the SNMP Trap Receiver runs.
 - c. Selecting the Trap Receivers SNMP Version.
 - d. Set the Trap Receiver Port.

The image shows a configuration window titled 'SNMP Trap Alerts'. It contains several settings:

- 'Enable 1st Trap Receiver': A green toggle switch is turned on.
- 'Trap Receiver 1 IP Address': A text field containing '192.168.11.159'.
- 'Enable 2nd Trap Receiver': A grey toggle switch is turned off.
- 'Trap Receiver 2 IP Address': A text field containing '192.168.11.23'.
- 'Trap Receivers SNMP Version': A dropdown menu set to 'SNMPv3'.
- 'Trap Receiver Port': A text field containing '5555'.

 At the bottom of the window are two buttons: 'Update' (orange) and 'Reset' (white).

- Click on the **Update** button when done. Once you click the update button, the Base Unit will reboot and will start sending SNMP trap alerts.



Above shows the SNMP Trap as received by iReasoning MIB Browser

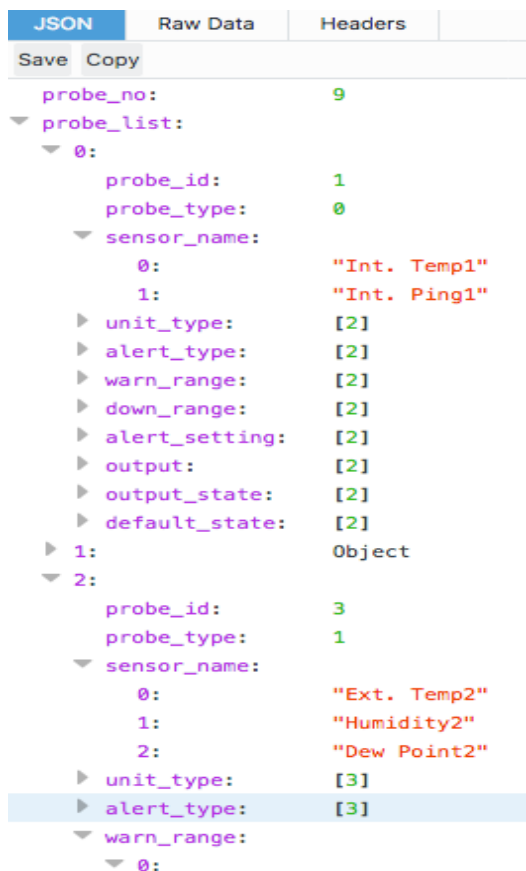
6.3 JSON (PULL)

To integrate using JSON, We just have to type in the URL the following extensions along with the IP address of your gateway.

<http://IP ADDRESS/probe list.json>

This call returns the list of sensor probes connected to the Base Unit and their settings. Example:

<http://192.168.1.1/probe list.json>



<http://IP ADDRESS/probe update.json>

And this call returns the latest values of all the sensor probes. Example:
http://192.168.1.1/probe_update.json

JSON	Raw Data	Headers
Save	Copy	
▼ probe_update:		
▼ 0:		
probe_id:	1	
probe_type:	0	
▼ status:		
0:	1	
1:	1	
▼ value:		
0:	30.65	
1:	30	
▼ 1:		
probe_id:	2	
probe_type:	19	
▶ status:	[6]	
▶ value:	[6]	
▼ 2:		
probe_id:	3	
probe_type:	1	
▶ status:	[3]	
▼ value:		
0:	29.01	
1:	51	
2:	19.2	
▶ 3:	Object	
▶ 4:	Object	

6.3.1 JSON Output Guide

```
"probe_no": 2,
"probe_list": [
  {
    "probe_id": 1,
    "probe_type": 0,
    "sensor_type": [81,112,167,0,0,0,0,0,0],
    "sensor_name": ["Int. Temp1","Int. Ping1","Int. Fault1",null,null,null,null,null],
    "unit_type": [2,16,1,1,1,1,1,1],
    "alert_type": [2,3,1,3,1,3,3,1],
    "warn_range": [[18.00,29.00],[50.00,0.00],[0.00,0.00],[100.00,0.00],[0.00,0.00],[100.00,0.00],[200.00,0.00],[0.00,0.00],[0,0]],
    "down_range": [[15.00,31.00],[60.00,0.00],[1.00,0.00],[300.00,0.00],[1.00,0.00],[300.00,0.00],[400.00,0.00],[1.00,0.00],[0,0]],
    "alert_setting": [[0,0,0,0],[0,0,0,0],[0,0,0,0],[0,0,0,0],[0,0,0,0],[0,0,0,0],[0,0,0,0],[0,0,0,0],[0,0,0,0]],
    "output": [null,null,null,null,null,null,null,null,null],
    "output_state": [0,0,0,0,0,0,0,0,null],
    "default_state": [null,null,null,null,null,null,null,null,null]
```

- “probe_no” – Indicates the total number of sensors connected to the Base Unit. The internal temperature sensor is counted as one (1) probe. Each externally connected sensor or daisy-chained group is also counted as one (1) probe.
- “probe_id” – Assigned sensor number used for identification. Probe ID 1 is always reserve for the Base Unit internal sensor.
- “probe_type” – Identifies the type of probe connected based on the values defined in **Table 1**. For example, a value of 0 corresponds to the Base Unit internal sensor.
- “sensor_type” and “sensor_name” – The sensor_type value is used to identify the corresponding sensor_name based on the definitions in **Table 2**. Each sensor_type code maps to a specific sensor_name. For example, sensor types **81**, **112**, and **167** correspond to **Int. Temp.**, **Int. Ping.**, and **Int. Fault**, respectively.
- “unit_type” – Indicates which symbol or value is currently being used. You can find the corresponding symbol or value for each unit type in **Table 3**.
- “alert_type” – Identifies which alert type is being used. For each value, there’s a matching code and description listed in **Table 4** so you can easily see what it means.
- “warn_range” and “down_range” – These show the warning and down limits for your readings. The warn_range indicates the lower and upper warning values, while the down_range indicates the lower and upper down values.

For example, if the warn_range is [18.00, 29.00], the lower warning is 18.00 and the upper warning is 29.00. Similarly, a down_range of [15.00, 31.00] means the lower down is 15.00 and the upper down is 31.00. You can also view these ranges directly on the home page of your Base Unit.

Status	Type	Name	Value	Warning Range	Down Range
	Temperature	Int. Temp1	29.23 °C	<18 OR >29	<15 OR >31

Table 1:

ID	Probe	ID	Probe Type
0	BASE UNIT INTERNALSENSOR	32	SEC-TILT
1	ENV-THUM	33	ENV-PARTICLE
2	ENV-TEMP	34	PWR-AC-METER3
3	PWR-FAIL	56	ENV-AIRQUALITY
4	ENV-WLEAK	67	EGD-SF6
5	ENV-WSPOT	68	GAS-VOC-NOx
6	PWR-FUEL	74	GAS-VOC
8	ENV-AIRFLOW	76	GAS-A1
9	SEC-SHOCK	77	GAS-A2L
10	PWR-DC-METER	78	GAS-A3
11	PWR-AC-METER	79	ENV-CORROSION
13	SEC-SOUND / ENV-NOISE	80	ENV-LHD
14	SECURITY SENSORS	82	R-EGD-PANEL
16	ENV-DUST	96	SEC-SMOKE
17	PWR-AC-CUR	99	R-ENV-NOISE
18	IND-IO	100	EXP-5HUB
19	EXP-8HUB (IO)	102	PWR-AC-CUR
22	ENV-AIRPRESSURE	103	ENV-THIMG
23	ENV-TVOC	104	IND-4-20MA
24	SEC-LUX	105	EXP-4HUB
25	THIMG-STD-IRSPOT	106	THIMG-M/LG2
26	GAS-CO2	107	THIMG-S/XS
27	ENV-LEAK-LOC	108	IND-0-10V
29	PWR-AC-QUAL	109	ADDON-8RELAY
30	EXP-12HUB	111	R-GAS-FLAMMABLE
31	PWR-GROUND		

Table 2:

Sensor Type	Sensor Name	Sensor Type	Sensor Name
81	INT. TEMPERATURE	147	O3
82	TEMPERATURE	148	PH3
83	HUMIDITY	149	C3H8
84	POWER	150	SO2
85	SHOCK	151	CO2 VOC (DAISY)
86	AIRFLOW	152	R134A
87	AIRPRESSURE	153	DC POWER STATUS
88	FLOODING	154	0 TO 10
89	WATER	155	R32
90	FUEL LEVEL	156	R1234YF
91	FLOW RATE	157	R1234ZE
92	SOUND	158	R454B
93	SECURITY	159	R404A
94	VOLT	160	R290
95	AMP	161	R410A
96	WATT	162	R22
97	WATTHOUR	163	SF6
104	DEW POINT	164	NOx
105	RESISTANCE	165	THERMAL IMBALANCE
106	DUST	166	FAN STATUS
107	RELAY	167	INT. FAULT
108	OUTPUT	168	TEMP HUM (DAISY)
109	LIGHT	169	DELTA VOC
110	MOTION	170	C5H4O2
111	SMOKE	171	CL2
112	INT. PING	172	CH3SH
113	4 TO 20	173	RATE OF RISE ALARM
114	TVOC	174	VOC IMBALANCE
115	CO2	175	A1
116	IR TEMPERATURE	176	A2L
117	DISTANCE	177	A3
118	LEAK LOCATION	178	CORROSION COPPER
119	H2	179	CORROSION SILVER
120	AC POWER STATUS	180	WEBSERVER STATUS
121	THD	181	FAULT REASON ONGOING
122	FREQUENCY	182	FAULT REASON PREVIOUS
123	O2	183	WIRE STATE
124	CO	184	HEAT LOCATION
125	HF	185	C4H10
126	RADON	186	C2H6
127	TILT	187	C4H8
128	PM	188	C3H8O

129	LEAK OIL	189	C4H8O
130	ACTIVE ENERGY	190	C5H12
131	ACTIVE POWER	191	C3H6
132	DAILY ENERGY	192	C3H6O
133	THERMAL MIN	193	C7H16
134	THERMAL MAX	194	C8H18
135	VOC	195	C8H8
136	NH3	196	C7H8
137	CLO2	197	C8H10
138	C2H4	198	SOUND MIN
139	ETO	199	SOUND MAX
140	CH2O	200	SOUND AVERAGE
141	HCL	201	AMBIENT VOC
142	HCN	202	ALARM VOC
143	H2S	203	OTHER FLAMMABLE
144	CH4	204	ANY FLAMMABLE
145	NO	205	H2 PURE
146	NO2	206	H2 + H2 MIXTURE

Table 3:

Unit Type	Symbol / Value	Description
1	(None)	No Unit Type
2	°C	Celsius (Temperature)
3	°F	Fahrenheit (Temperature)
4	%RH	Relative Humidity
5	%	Percentage
6	ppm	Parts Per Million
7	G	Shock / Acceleration
8	m/s	Speed
9	V	Voltage
10	A	Current (Ampere)
11	W	Power
12	kWh	Energy / Average Power
13	Sec	Time (Seconds)
14	Kbps	Bandwidth
15	dBm	Signal Strength
16	ms	Milliseconds
17	dB	Sound Pressure
18	Ohm	Resistance / Grounding
19	mg/m ³	Mass Concentration
20	Lux	Light Intensity
21	Pa	Pascal (Pressure)
22	ppb	Parts Per Billion
23	ppm	Parts Per Million
24	cm	Centimeter
25	m	Meter
26	%LEL	Lower Explosive Limit
27	Hz	Frequency
28	°	Angle (Degrees)
29	µg/m ³	Micrograms per Cubic Meter
30	kW	Kilowatt (Power)
31	%VOL	Volume Percentage
32	Bq/m ³	Radioactivity (Becquerel)
33	dBA	A-weighted Sound Level
34	Å	Angstrom

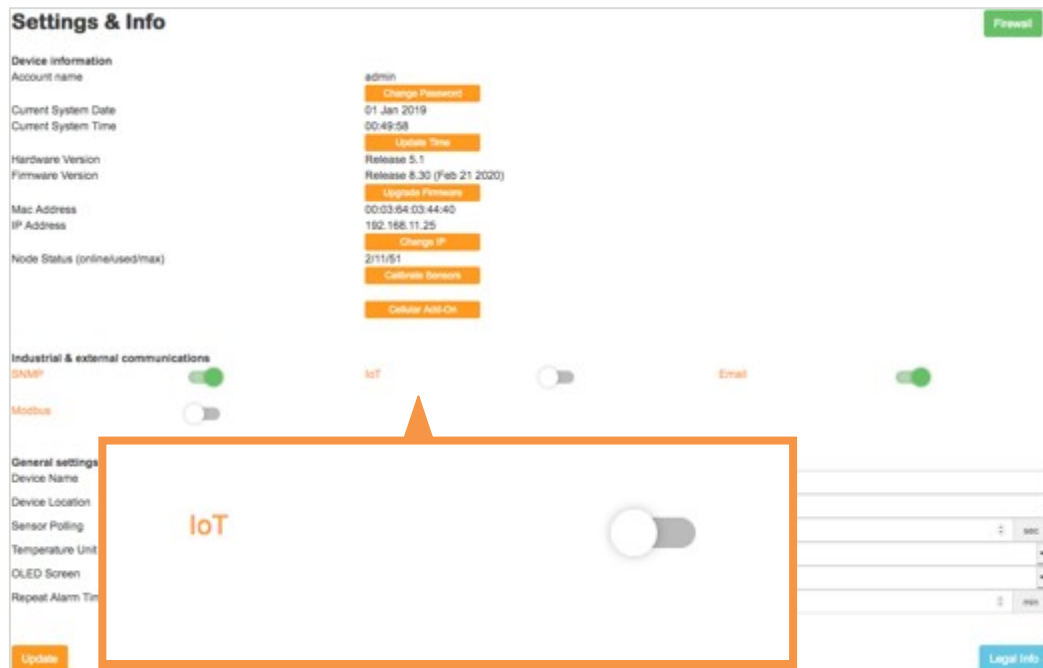
Table 4:

Value	Description
1	Supports Normal and Down states only.
2	Uses full threshold evaluation: Lower Down Threshold → Lower Warning Threshold → Normal Range → Upper Warning Threshold → Upper Down Threshold.
3	Supports Normal, Upper Warning, and Upper Down states.
4	Supports Lower Down, Lower Warning, and Normal states (alternative sequence handling).

6.4 JSON (PUSH) with ADDON-LTE

With the use of our ADDON-LTE, we are now enabled to integrate into your IoT platforms.

Once we connect the LTE add-on into our base unit, we will have a new option for IoT under the settings menu.



Click on the IoT option and it will bring us to the set up page for our IoT integration.



You can now input the URL where the data should go, the Device ID that will identify the gateway sending the data, Username and password for security and the update interval.

Note: Update interval has a minimum of 5 minutes

JSON structure is as follows:

```
{
  "t": "2020-02-21T05:20:33Z",
  "d": "000364037961",
  "u": "user",
  "p": "pass",
  "lo": "27.674",
  "la": "53.874",
  "nsg": "14",
  "nty": "3G",
  "nst": "sim1"
}
{
  "t": "2020-02-21T05:20:33Z",
  "d": "000364037961",
  "u": "user",
  "p": "pass",
  "sensors": [
    {
      "si": "1",
      "sn": "Int. Temp1",
      "st": "Int. Temp",
      "sv": "24.40"
    }
  ]
}
{
  "t": "2020-02-21T05:20:33Z",
  "d": "000364037961",
  "u": "user",
  "p": "pass",
  "sensors": [
    {
      "si": "2",
      "sn": "Int. Ping1",
      "st": "Int. Ping",
      "sv": "1.00"
    }
  ]
}
...
{
  "t": "2020-02-21T05:21:36Z",
  "d": "000364037961",
  "u": "user",
  "p": "pass",
  "IOs": [
    {
      "si": "9",
      "sn": "UndefinedIO 1",
      "st": "Dry Contact",
      "sv": "0"
    }
  ]
}
```

t = is the timestamp in UTC d = is the device ID
u = is the username p = is the password

The first call is the connectivity details:

lo: longitude from GPS la: latitude from GPS

nsg: network signal strength nty: network type 4G/3G/2G nsi: sim used

```
"sensors": [
  {
    "si": "1",
    "sn": "Int. Temp1",
    "st": "Int. Temp",
    "sv": "24.40"
  }
]
```

This is the sensors structure:

si: sensor sequential identifier sn: sensor name

st: sensor type sv: sensor value

6.5 JSON (PUSH) with ADDON-LTE – Adding webhook Endpoint

First, visit webhook.site and click on 'Your unique URL' then copy the URL.

The screenshot shows the Webhook.site interface. The main content area displays the 'Your unique URL' as `https://webhook.site/bb8ad622-1cd4-47f2-8c6f-2b759bc39a8d`, which is highlighted with a red box. Below this, the 'Your unique email address' is `bb8ad622-1cd4-47f2-8c6f-2b759bc39a8d@email.webhook.site`. The page also includes a sidebar with 'REQUESTS (0/500)' and 'Search Query', and a bottom section for 'Request Details' and 'Form values'.

After copying the URL, let's return to our IoT settings to input the credentials.



IoT Connectivity

Send Data to Cloud ☒

URL

https://webhook.site/bb8ad622-1cd4-47f2-8c6f-2b759bc39a8d

Device ID

00036403EA7D

Username

admin

Password

Update interval

every 5 min

Update

Reset

Above is an example input using the newly generated endpoint. The device ID, username, password and interval are all customizable.

webhook.site

Docs & API Custom Actions WebhookScript Terms & Privacy Support

Copy Edit + New Login Upgrade

REQUESTS (49/500)

Newest First

Search Query

POST #a8ccc

209.35.167.229

11/07/2023 6:57:41 PM

POST #b05d9

209.35.167.229

11/07/2023 6:57:39 PM

POST #8e000

209.35.167.229

11/07/2023 6:57:32 PM

POST #36888

209.35.167.229

11/07/2023 6:57:30 PM

POST #842a3

209.35.167.229

11/07/2023 6:57:28 PM

POST #c8de6

209.35.167.229

11/07/2023 6:57:26 PM

Request Details

Permalink

Raw content

Copy as

POST https://webhook.site/bb8ad622-1cd4-47f2-8c6f-2b759bc39a8d

Host

209.35.167.229 Whois Shodan Netlify Censys

Date

11/07/2023 6:52:53 PM (5 minutes ago)

Size

139 bytes

ID

57a08313-cd1d-4467-bc28-5884fcd02eea

Files

Query strings

(empty)

Raw Content

```
{
  "t": "2023-11-07T10:51:29Z",
  "d": "00036403EA7D",
  "u": "admin",
  "p": "admin",
  "IOs": {
    {
      "s1": "20",
      "sn": "UndefinedIO 4",
      "st": "Dry Contact",
      "sv": "0"
    }
  }
}
```

Headers

content-type

application/json

connection

close

content-length

139

host

webhook.site

Form values

(empty)

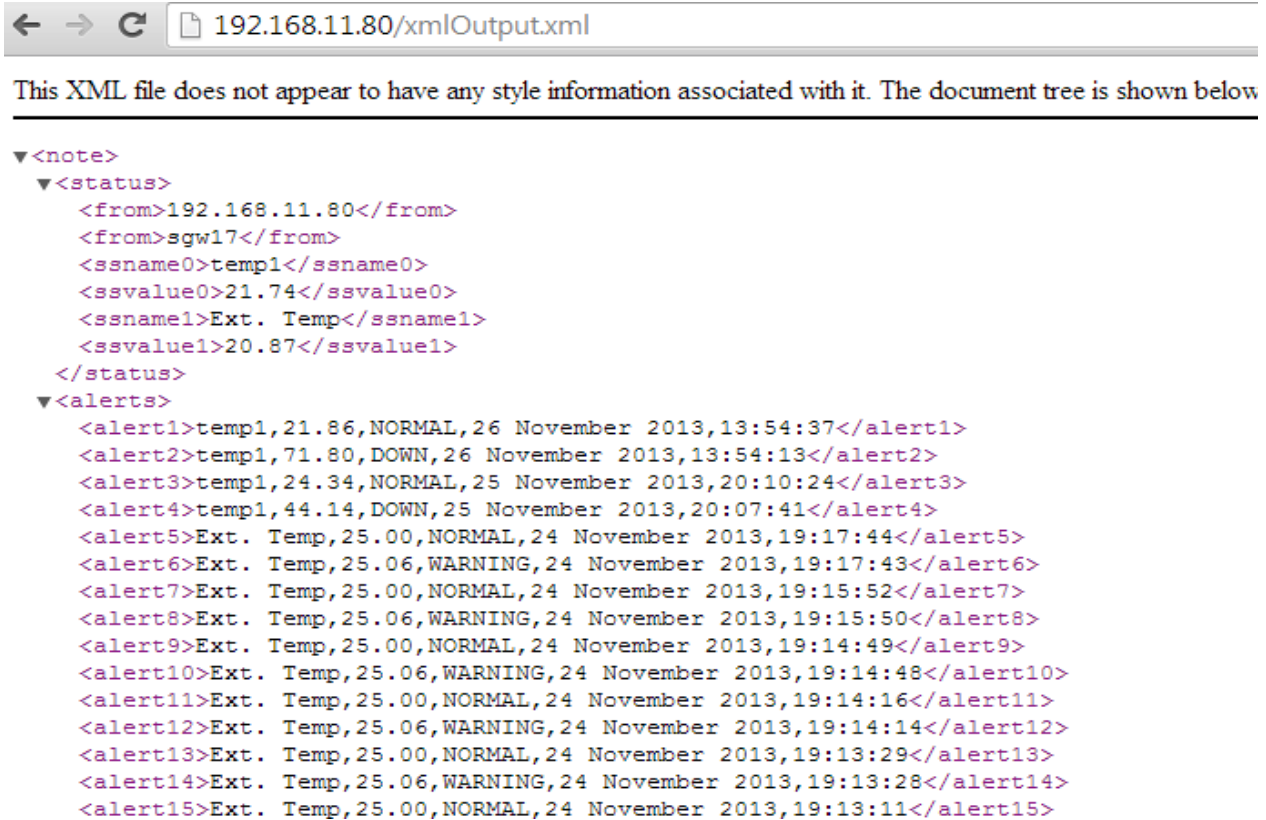
Format JSON Word-Wrap Copy

Go back to your browser where your endpoint is opened and results will start to populate.

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6.6 XML output



The log can be accessed by appending *xmlOutput.xml* at the end of the Base Unit's IP address/FQDN as seen on the screenshot. More than the alerts, it also gives you the current status of the device. This option shows the latest 500 alert entries.

6.7 ModBus TCP / RTU

With the firmware 9.2 and above, Base Unit Modbus TCP can now be polled by 4 Modbus masters. For detailed instructions on Modbus usage, please refer to the dedicated manual available on our website or you may access it through the provided link below:
[Modbus Manual](#).

7 Sensor Calibration

A unique feature of the InfraSensing Base Unit and external probes is that the Base Unit has a calibration feature available from the web interface. This feature allows to correct temperature and humidity readings based upon, for example a NIST Traceable measurement system.

To recalibrate the built-in or external probes, Go to Menu and then Settings.

Settings & Info

Device information

Account name

admin

[Change Password](#)

Current System Date

14 Feb 2019

Current System Time

01:02:05

[Update Time](#)

Hardware Version

Release 5.1

Firmware Version

Release 8.00 (Feb 12 2019)

[Upgrade Firmware](#)

Mac Address

00:03:64:03:44:40

IP Address

192.168.11.104

[Change IP](#)

Node Status (online/used/max)

3/43/44

[Calibrate Sensors](#)

Adjust your sensor readings by modifying the offset value (either + or -) and click on Update.

Note : Our sensors are pre calibrated by our manufacturer However we do offer our very own Calibration Certificate more information can be found here <https://infrasensing.com/lab/>**

Sensor Calibration

Sensor Type	Example Value	Operator	Offset value
InternalTemp	28.58 °C	+ -	0.00
ExternalTemp	? °C	+ -	0.00
ExternalHumd	? %RH	+ -	0.00
Fuel Level Max	?	=	1023.00
Fuel Level Min	?	=	0.00
Flow Rate Period (min)	5	-	5
Air Flow Threshold	?	>	20.00
Shock Threshold	?	>	765.00
Temp Threshold	0.00	-	0.00
Humidity Threshold	0.00	-	0.00
AC Voltage Type	220/240	110/120	-
AC Voltage Offset	?	+ -	0.00
Sync Internal Temp Sensor with External	☐		
Thermal Emissivity (0.01-1)	0.95		
Power Quality	230 Volts / 60 Hz		
Reset 3-Phase Power Meter Counter	Reset Counter		
Reset Power Meter Total kWh Reading	Reset Reading		
Reset Tilt Sensor Values	Set to Zero Reset to Default		
Turn Panel Fan	On Off		
DC Power Control Sensor:			
Minimum(7-89) / Maximum(10-90) Voltage	-	7.00 48.00	
Minimum(0-89) / Maximum(0.1-90) Current	-	1.00 50.00	
Minimum Time to detect error (0-120s)	-	-	10.00
Reset Counter	Reset Counter		

Select CO2/VOC Reference Sensors

[Update](#) [Reset](#)

With the introduction of firmware version 9.1, a new feature has been incorporated, allowing users to designate CO2/VOC sensors as reference points. For more information, refer to section 7.1

7.1 Reference Sensors

Reference Sensor Selection" is a feature that offers the ability to designate a sensor as the reference point. Whether a CO2/VOC regular or daisy sensor is connected, a dropdown menu will appear to facilitate the selection of the reference sensor.

Select CO2/VOC Reference Sensors

Update

Reset

Reference Sensor Selection

CO2 Reference

VOC Reference

VOC Sensor2

CO2 Offgas Enable

VOC Offgas Enable

Update

7.2 Tolerance level

Flow Rate Period(min)	5	-	5
Air Flow Threshold	?	>	20.00
Shock Threshold	?	>	765.00
Temp Threshold	0.00	-	0.00
Humidity Threshold	0.00	-	0.00
AC Voltage Type	☒ 220/240	☐ 110/120	-
AC Voltage Tolerance	?	+	0
AC Voltage Value	-	-	220.00
Sync Internal Temp Sensor with External	☐		

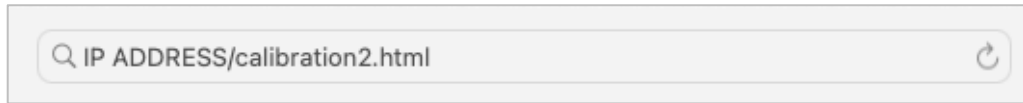
As you can see in the image above, you can also set the tolerance level (threshold) which is a parameter where in a trigger won't go off immediately if its within tolerance levels.

An example on how it is used is if you have an alert that would trigger at 30 degree Celsius and a tolerance set at "5" what happens is, if your actual temperature goes on to 30 degrees an alert would trigger and you would only receive a recovery alert or an "OK" status once the value goes down to 25 degrees as set on the tolerance level. That way, if in case the temperature goes down between 25.1 – 29.99 then goes back to 30 or above you won't get spammed with alerts or recovery emails or in a case where a device is set to turn on when the threshold is met and would turn off if not, you would avoid having that device to turn on and off countless times.

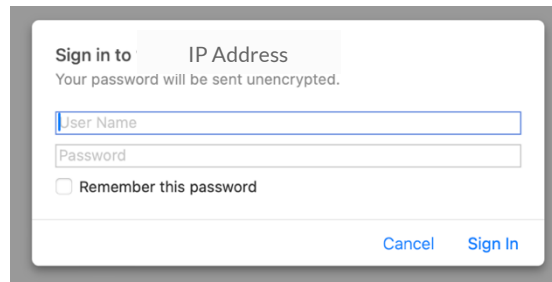
7.3 Threshold change and additional calibration functions

With the latest firmware update, you can now modify or configure the thresholds, you can access it using the following link format below:

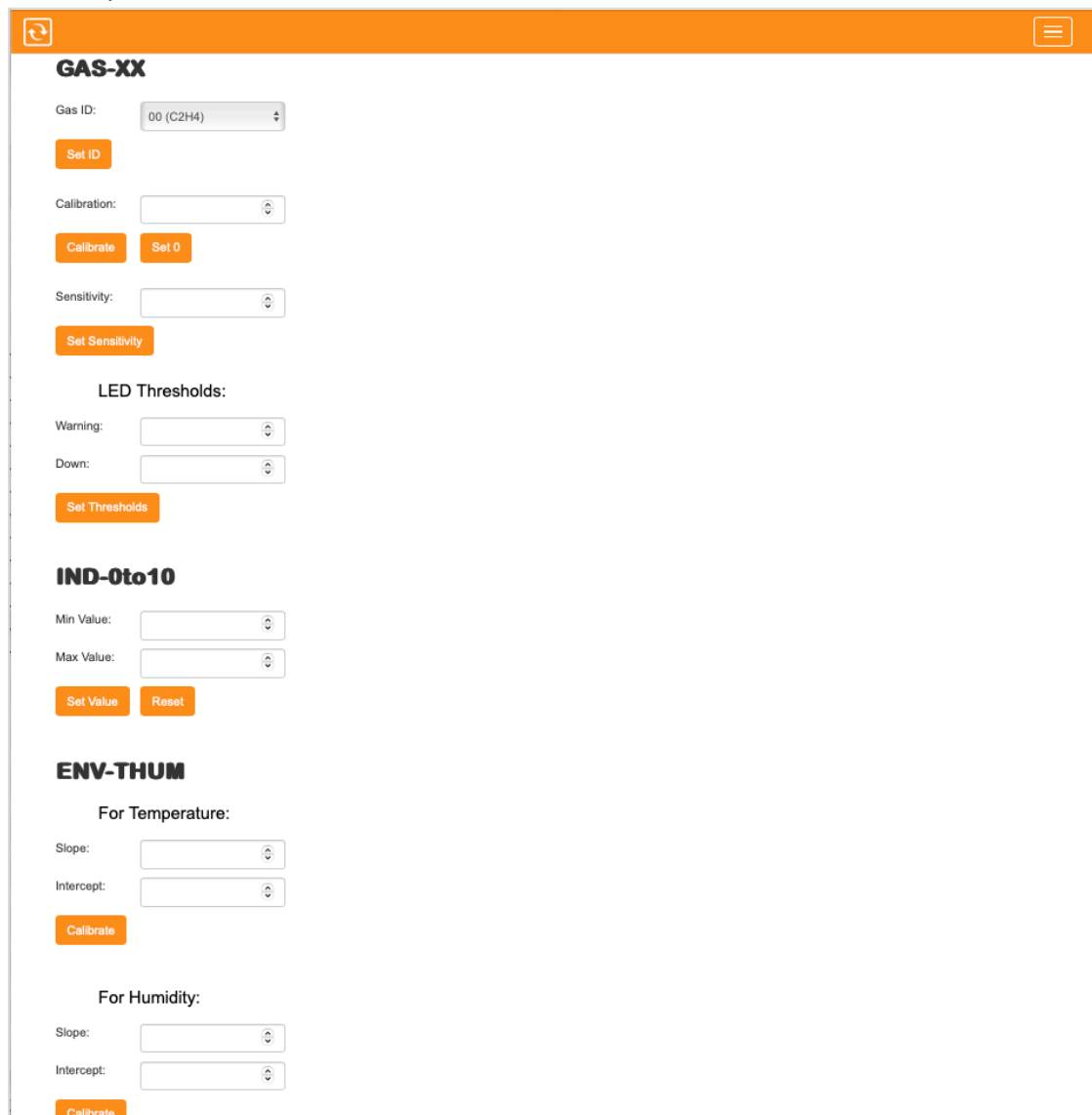
(Base Unit's IP Address)/calibration2.html



Once you access the link, you will be prompted with this window which it will ask you for your username and password. By default the username and password is admin/admin



Upon logging in, you will be routed to the special calibration page. At the very bottom of the page you will be able to see the option for ENV-LHD.



RS485-GAS-VOC-H2

Thresholds:

Relay 1:

Relay 2:

Set Thresholds

Modbus Config:

Baudrate:

Parity:

Stop Bits:

Set Config

ENV-LHD

Resistance per Meter

Resistance

Set

Resistance Offset

Line 1

Line 2

Set

This is where you can set or adjust threshold to each sensor provided on this page.

8 Factory resetting of Base Unit

8.1 Base Units v1 and v2

Following only applies to Base Units v1 & v2 - the matching models are shown below



You can always hard reset the Base Unit to its default factory settings as follows. Resetting the device to factory default will result in all settings to be lost



Plug in power adapter or PoE cable

Within 2 seconds from plugging the power adapter or PoE cable, push the **Reset** button with a pen or similar and hold it for 5 seconds before releasing it.

Wait until the yellow LED doesn't blink anymore

Reconnect to the Base Unit's web interface at <http://192.168.11.160>

8.2 Base Unit v3 and v4

Following only applies to Base Units v3 and v4 - matching the picture below. Kindly note that due to a mistake in the boot loader of v3 units, the internal system specifications show it as a v2 unit. However, those are v3 units (or v4 for dual sensor probes) when they match the picture below.

You can always hard reset the Base Unit to its default factory settings as follows. Resetting the device to factory default will result in all settings to be lost



Remove the external sensor probe Remove the power adapter or PoE cable Push the **Reset** button
While the **Reset** button is pushed, plug in the power adapter or PoE Cable After 10 seconds the Green & Yellow LED's will be on steady (not blinking) Remove power adapter or PoE cable
Wait 3 seconds
Plug in power adapter or PoE cable
After a few seconds both Green & Yellow LED's are blinking
Reconnect to the Base Unit's web interface at <http://192.168.11.160>

8.3 Base Unit v5

Following only applies to Base Units v5

Resetting the device to factory default will result in all settings to be lost



1. Remove the external sensor probe.
2. Remove the power adapter or PoE powered network cable.
3. Push the **Reset** button.
4. While the **Reset** button is pushed, plug in the power adapter or PoE powered network cable .
5. Hold it for 15 seconds before releasing it. The yellow LED should be blinking fast.
6. Wait until the yellow LED is not blinking fast anymore.
7. On the LED display, the Base Unit will reboot. After a few seconds both Green & Yellow LED's should be flashing slowly.
8. While the PoE or power adapter is plugged in, push the **Reset** button.
9. Hold it for 15 seconds before releasing it.
10. On the LED display, the Base Unit will reboot. After a few seconds both Green & Yellow LED's should be flashing slowly.
11. The base unit will reset and it will go back to the default home page where they will upload the latest firmware they have.

Base Unit Default Factory Firmware

Hardware Info

Internal Temperature	35.06 C / 95.11 F
Outside Temperature	32.31 C / 90.16 F
IP Address	192.168.9.40
Subnet Mask	255.255.255.0
Default Gateway	192.168.9.1

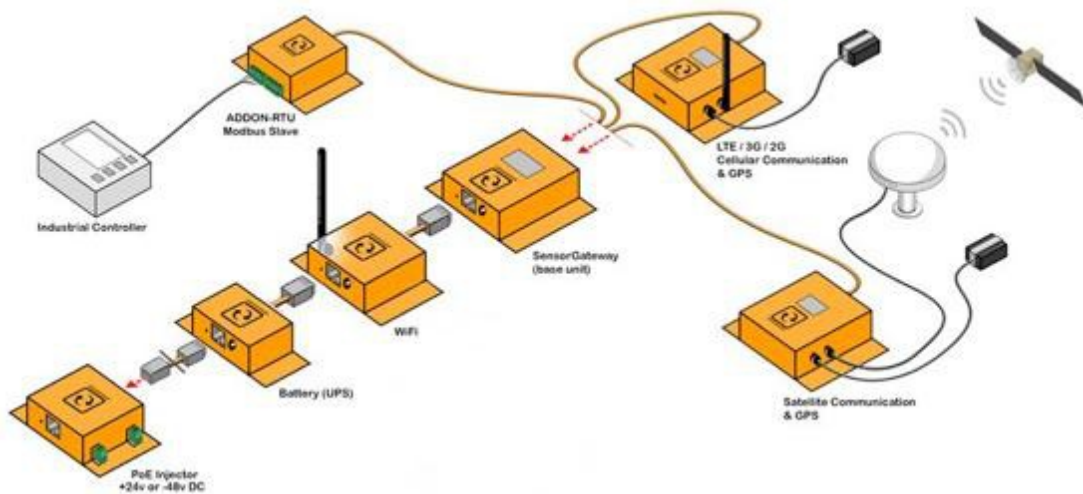
This is the default firmware - Please update the firmware to start using the device.

No file selected.

12. Reconnect to the Base Unit's web interface at **http://192.168.11.160** If you are unable to connect on that IP address then lookup the IP address of the device either from your DHCP server or using the Sensor Discovery Tool - <https://infrasensing.com/support/downloads.asp>

9 Add-Ons for the Base Unit

The Base Unit, the base unit, requires by default a network cable and 12v DC or POE power input. With the optional add-on modules, customers can add other network and power connectivity options to the base units.



9.1 Wifi Add-On

The InfraSensing Add on Wifi module is an expansion unit to the Base Unit which enables wired and wireless networking application. The Add on Wifi module supports 802.11n standards, and provides backward compatibility with older 802.11b/g standards as well. The up- to-150Mbps wireless speed makes it ideal for handling multiple data streams at the same time that ensures your network is stability and reliability



9.1.1 Features

Portable design

Connects directly to the Base Unit

Directly powers the Base Unit via the 12v DC adapter output GUI accessible using any browser

USB support for 3G and LTE dongles

Pre-encryption that prevents unauthorized access from users outside of the network

It enables you to:

Add a Standard Wireless Router mode that creates an instant private wireless network to access and configure the Base Unit

Add an Access Point mode that creates a wireless network for Wi-Fi devices to access and configure the Base Unit

Add a client mode functionality that works as a wireless adapter for any Ethernet enabled devices to access and configure the Base Unit

Add an 3G and LTE USB data connection to your network when there is no ISP available

9.1.2 View of the Wifi Add-On Connected to the Base Unit



9.1.3 Hardware interface

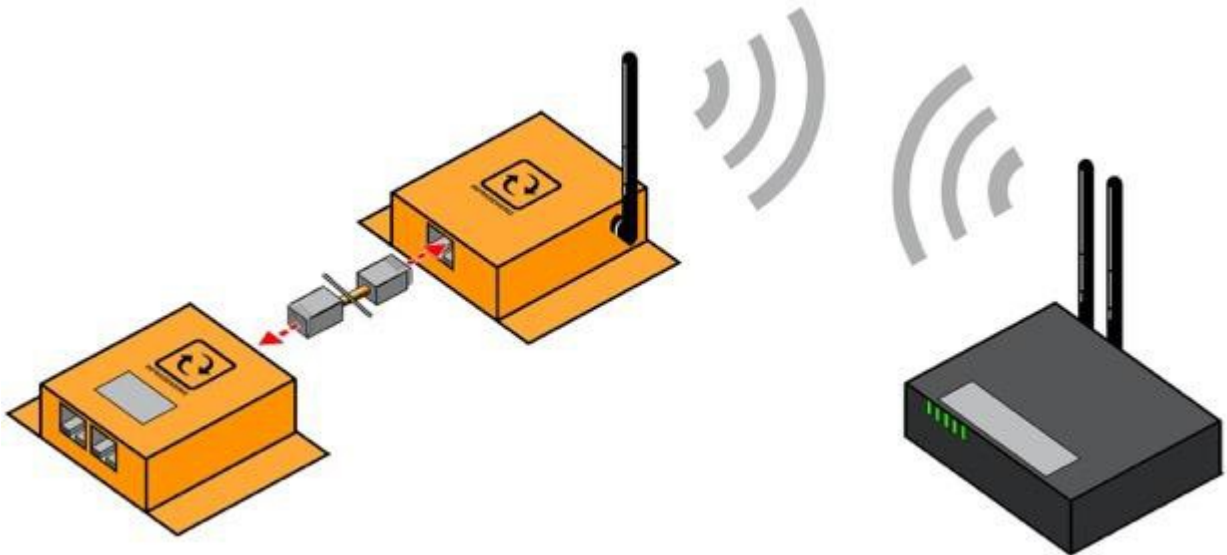


Interface	Description
ANT	Wireless antenna
ETH1	WAN/LAN port
ETH0	LAN port to Base Unit
DC IN	12-volt DC adapter socket
USB1	USB for 3G and LTE dongle

9.1.4 Getting started

Powering the Add-On Wifi module with Base Unit

1. Connect the 12-volt DC adapter to the DC IN socket
2. Wait for the RED LED to turn solid
3. Connect the Base Unit to the Add on Wifi module via ETH0 and DC OUT



System requirements

PC with working LAN/WLAN interface TCP/IP protocol installed on the PC
Web browser (Chrome, Firefox, IE, Safari etc.) LAN cables (RJ 45)
RJ 45 male to female adapter for configuration via ETH0

9.1.5 How to access the Graphical User Interface (GUI)

We can access the GUI via WLAN and/or LAN connection. Configurations will be done on the GUI

As an access point (WLAN)

Power on the Add on Wifi module

Connect via Wifi to the unsecured SSID "ServersCheck"

Launch a web browser and type the default IP 192.168.1.1 to the address bar By default there is no password that has been set

Username must always be "root"

Click LOGIN to access main menu page

Base Unit GUI will be available from the IP address on the OLED screen

Make sure that the Add on Wifi module and Base Unit has the correct IP range Setting the Base Unit to DHCP is recommended

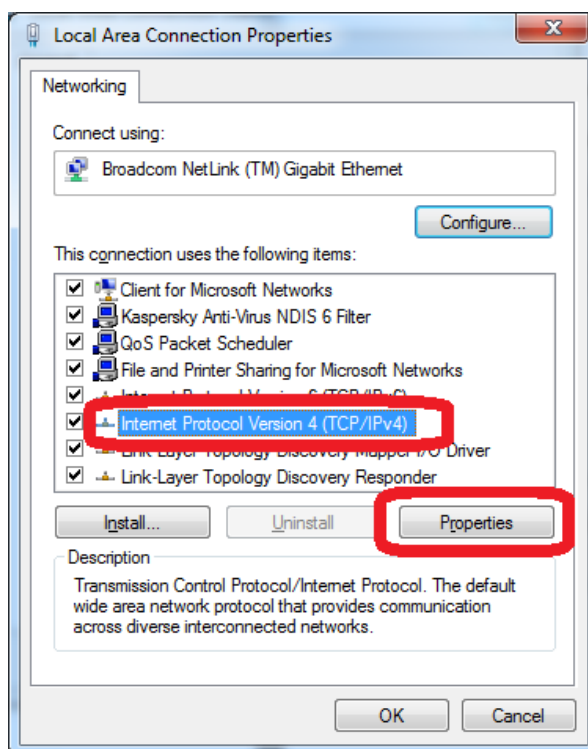
LAN connection to PC (LAN)

The steps below apply to a Windows 7 system. For other systems (Windows, Mac, *Nix) steps are similar

Power on the Add on Wifi module Connect ETH1 to the LAN port of your PC

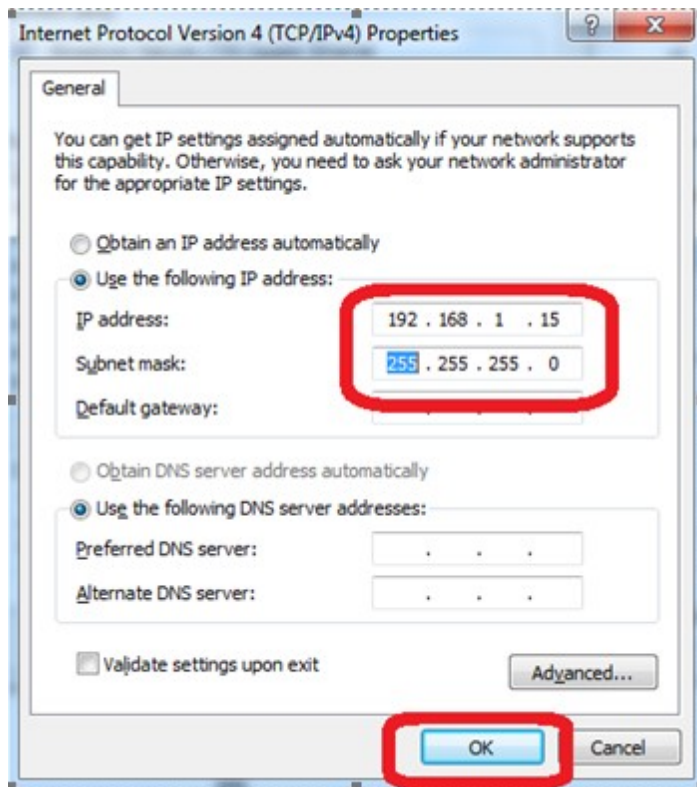
Go to Network Panel > Network & Sharing Center

Click on **Local Area Connection** and then click on **Properties**. In the new window select **Internet Protocol Version 4** and click on the **Properties** button.



Set the corresponding IP ranges

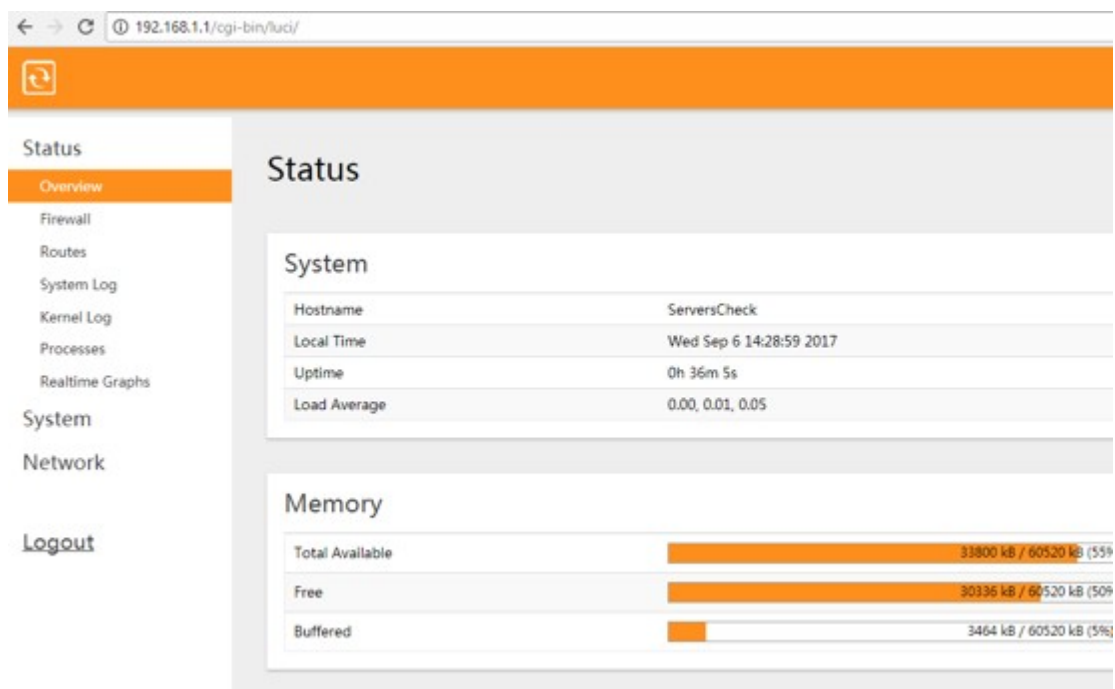
We recommend setting it to 192.168.1.15 as shown below. When done, click on the OK button.



Launch a web browser and type the default IP 192.168.1.1 to the address bar. By default there is no password that has been set.

Username must always be "root".

Click LOGIN to access main menu page.



Base Unit GUI will be available from the IP address on the OLED screen.

Make sure that the Add on Wifi module and Base Unit has the correct IP range. Setting the Base Unit to DHCP is recommended

9.1.6 Username and password settings

Access the GUI.

By default there is no password that has been set. Username must always be “root”.
Click LOGIN to access main menu page.

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.

Go to password configuration...

Authorization Required

Please enter your username and password.

Username

Password

Desined by ServersCheck 2017

Go to System > Administration Set and confirm password Click SAVE and APPLY

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.

Go to password configuration...

Router Password

Changes the administrator password for accessing the device.

Password

Confirmation

There will be a notification that the password was successfully set

Password successfully changed

Router Password

Changes the administrator password for accessing the device.

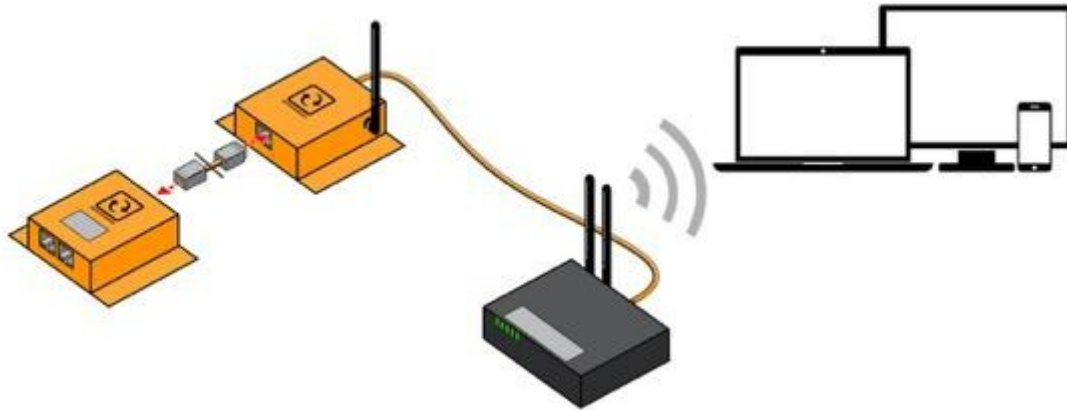
Password

Confirmation

9.1.7 Configuration modes

Adding Internet connection to the Base Unit via ETH0 can be done with the following modes.

As wireless router



Access the GUI using WLAN Go to Network > Interfaces Edit LAN network

Navigation menu:

- Status
- System
- Network
 - Interfaces**
 - WiFi
 - DHCP and DNS
 - Hostnames
 - Static Routes
 - Firewall
 - Diagnostics
- Logout

Interfaces

Interface Overview

Network	Status	Actions
LAN br-lan	Uptime: 2h 15m 47s MAC-Address: C4:51:00:04:68:44 RX: 454.40 KB (5317 Pkts.) TX: 880.63 KB (5224 Pkts.) IPv4: 192.168.1.1/24 IPv6: fda1:dd19:3d58::1/60	CONNECT STOP EDIT DELETE
USB4G eth0	RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.)	CONNECT STOP EDIT DELETE

[ADD NEW INTERFACE](#)

Go to Physical Settings tab and uncheck Ethernet adapter: eth1 (LAN)

Interfaces - LAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking interfaces separated by spaces. You can also use [VLAN](#) notation `INTERFACE.VLANNR` (e.g.: `eth0.1`).

Common Configuration

General Setup Advanced Settings **Physical Settings** Firewall Settings

Bridge interfaces ☒
 ⓘ creates a bridge over specified interface(s)

Enable [STP](#) ☐
 ⓘ Enables the Spanning Tree Protocol on this bridge

Interface ☒ Ethernet Adapter: "eth0" ([lan](#))
 ☐ **Ethernet Adapter: "eth1" ([lan](#))**
 ☐ Ethernet Adapter: "eth2" ([usb4g](#))
 ☒ Wireless Network: Master "ServersCheck" ([lan](#))
 ☐ Custom Interface:

Click SAVE and APPLY

Go to Network > Interfaces ADD NEW interface

Interfaces

Interface Overview

Network	Status
LAN  br-lan	Uptime: 2h 26m 15s MAC-Address: C4:93:00:04:6B:44 RX: 621.69 KB (7299 Pkts.) TX: 1.28 MB (7160 Pkts.) IPv4: 192.168.1.1/24 IPv6: fda1:dd19:3d58::1/60
USB4G  eth2	RX: 0 B (0 Pkts.) TX: 0 B (0 Pkts.)

ADD NEW INTERFACE...

Create Interface

Name of the new interface

❓ The allowed characters are: A-Z, a-z, 0-9 and _

Note: interface name length ❓ Maximum length of the name is 15 characters including the dot

Protocol of the new interface Static address ▼

Create a bridge over multiple interfaces ☐

Cover the following interface

- ☐  Ethernet Adapter: "eth0" (lan)
- ☒  Ethernet Adapter: "eth1" (lan)
- ☐  Ethernet Adapter: "eth2" (usb4g)
- ☐  Wireless Network: Master "ServersCheck" (lan)
- ☐  Custom Interface:

Interfaces - ETH1

On this page you can configure the network interfaces. You can bridge several interfaces by ticking interfaces separated by spaces. You can also use [VLAN](#) notation `INTERFACE.VLANNR` (e.g.: `eth0.1`).

Common Configuration

General Setup

Advanced Settings

Physical Settings

Firewall Settings

Create / Assign firewall-zone

☐ lan: lan:   

☒ wan: usb4g: 

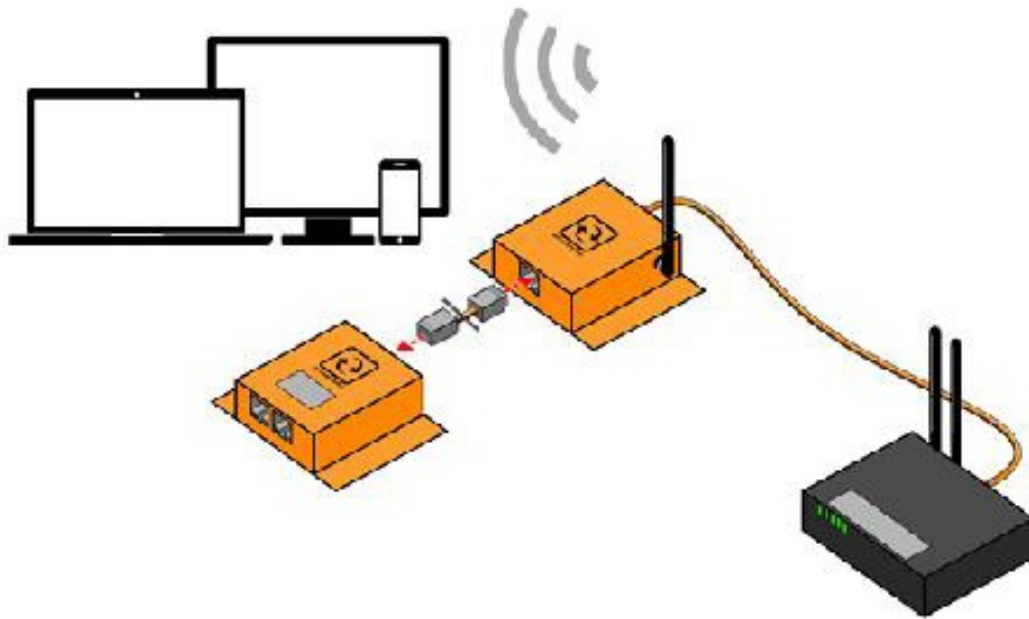
☐ unspecified -or- create:

?

Choose the firewall zone you want to assign to this interface.

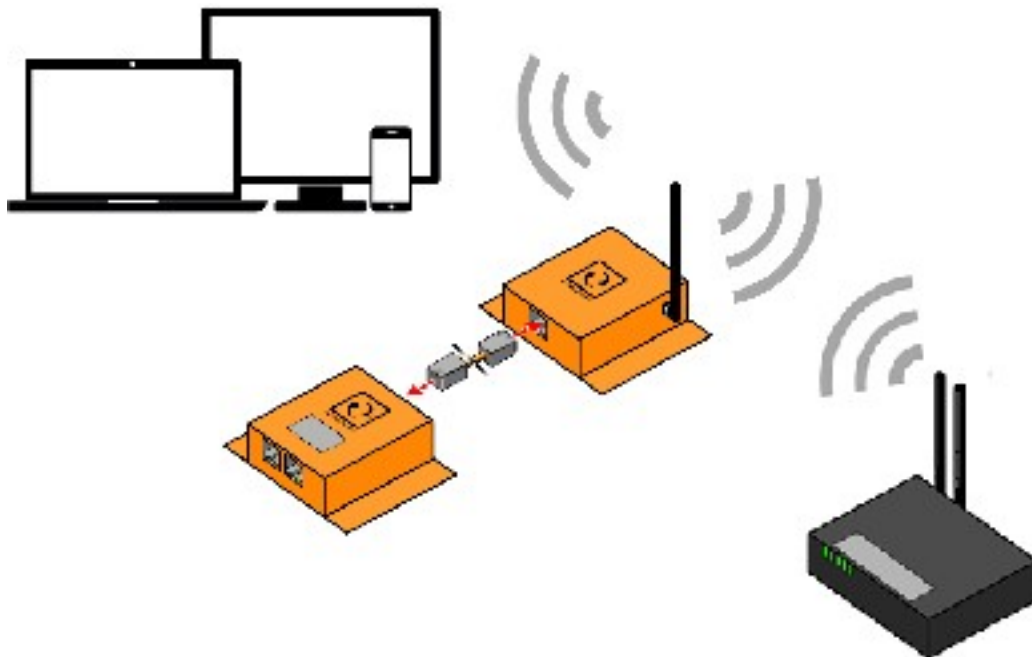
110

As an access point

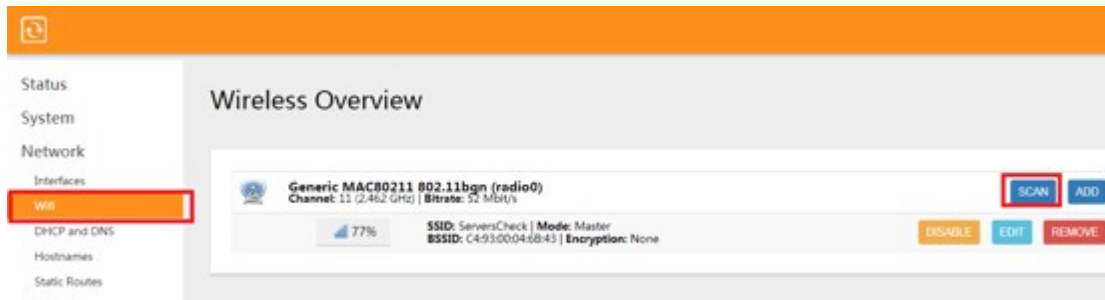


Do steps 1 to 12 from Wireless Router configuration (section 9.1.7) Connect ETH1 to any of the LAN port of the Router
Internet connection will be available on ETH0

As a WIFI client



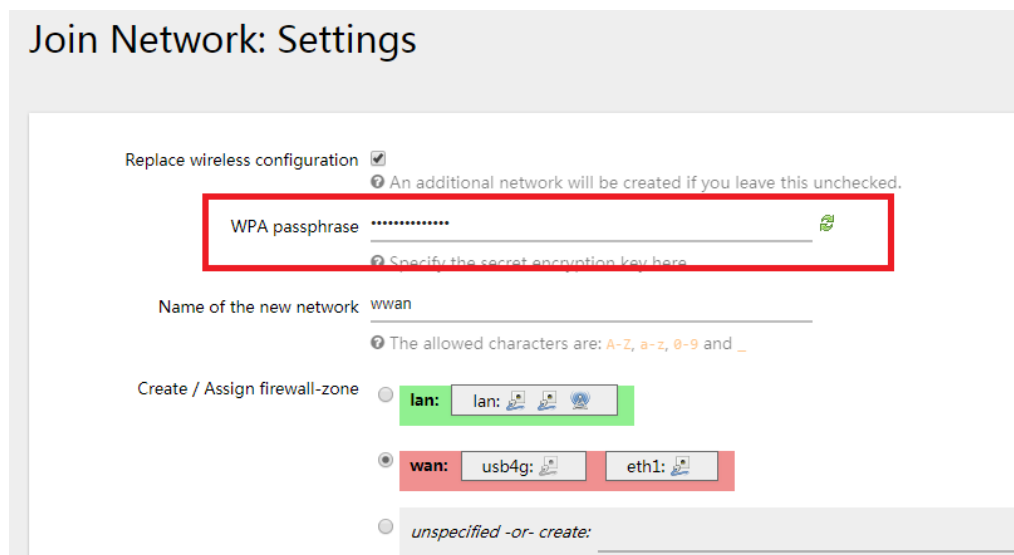
Access the GUI using WLAN or LAN Go to Network > Wifi
Do a SCAN for available Wireless networks



Join the desired Wifi network



Type the password for the Wifi network and uncheck the “replace wireless configuration”



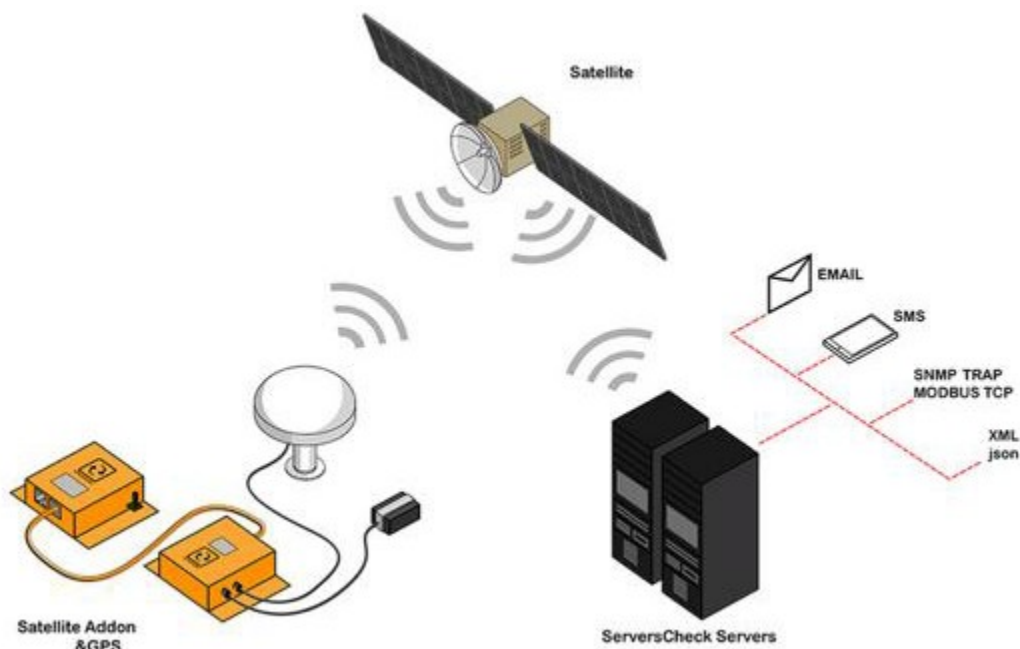
Click SUBMIT
Internet connection will be available on ETH0

NOTE: The WIFI add-on serves as a router and designed for you to connect directly to the device, In the event that you want to integrate the device into your network it is indeed possible by having a network engineer configure the routing tables or protocols to be used for the connection.

9.2 Satellite Communication Add-On (ADD-ON SATELLITE)

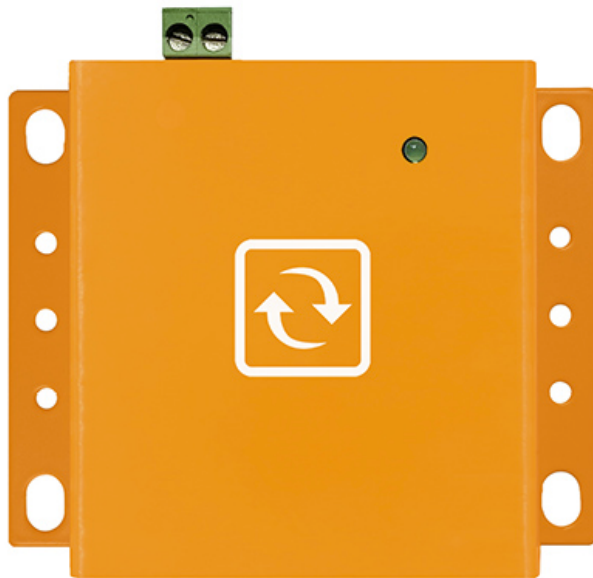


The add-on is used to send alerts via Satellite connection, it has global satellite coverage from pole to pole. Can be used as primary or back up connection enables you to receive alerts via email, SMS through space and has built-in GPS.

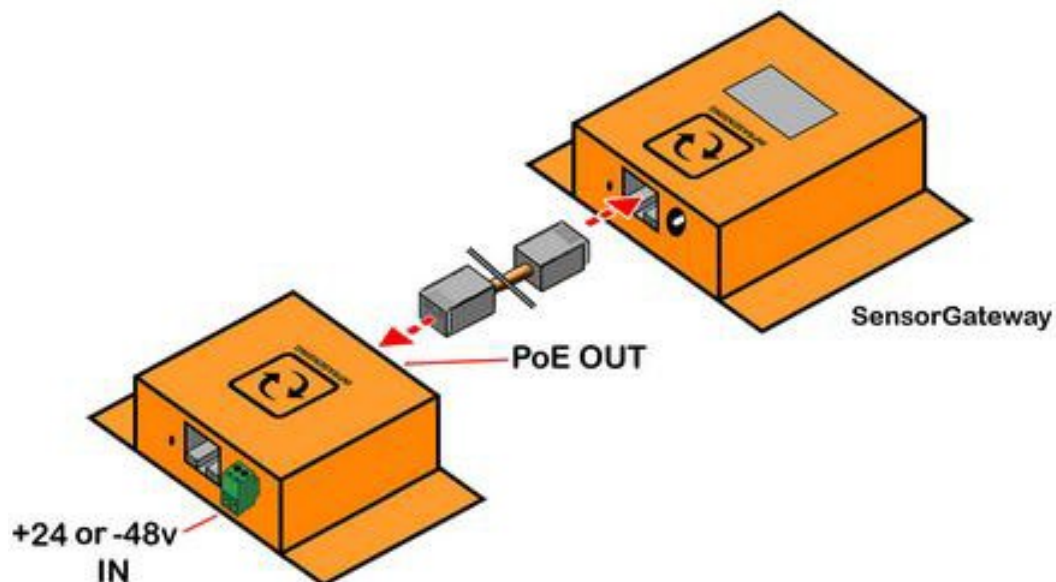


In order to use the add-on a monthly subscription through InfraSensing is required to connect the device onto the satellite network. Credits are required per message sent or received by the Base Unit

9.3 Industrial PoE+ Injectors +24 or -48v (ADDON-POE-24 / ADDON-POE-48)

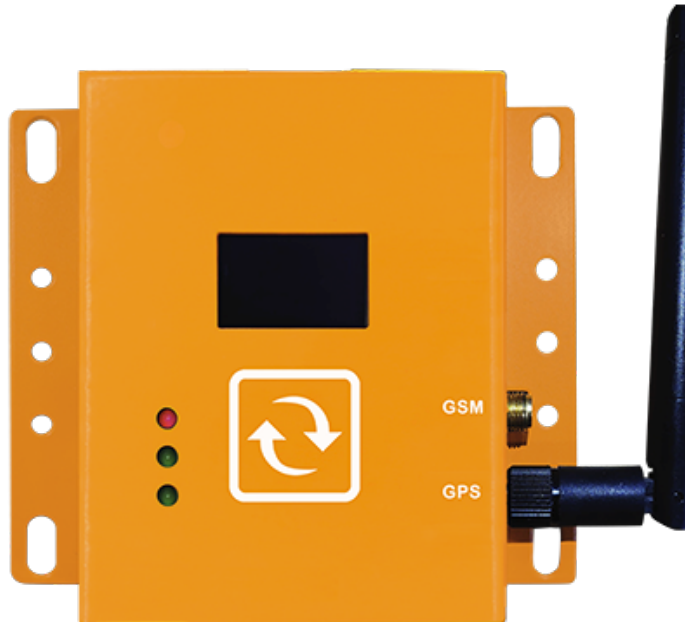


Designed to support the deployment of our sensor platform in industrial environments operating on +24v DC and for the telecom industry, the telecom version PoE addon supports negative -48v DC as power input. This second generation of our DC Power Add-On has been modified so that we not just support our base units, but any PoE 802.3at enabled device. Up to 22 Watts.



9.4 LTE/2G/3G Communication Add-On (ADDON-LTE)

Designed to send alerts even when your IP network is down. Supports Global LTE/3G/2G connection and can send SMS alerts using your local micro SIM card. (Micro SIM + Data Plan required)



The add-on features support for two(2) micro SIM cards. When the network on SIM1 fails, then automatically it will use the network of the backup SIM to send out the alerts and data.

The Cellular alerting add-on has the Quectel wireless module embedded. This module has international carrier and regulatory approval as follows:

Carrier approvals: Deutsche Telekom(Europe), Rogers (Canada)

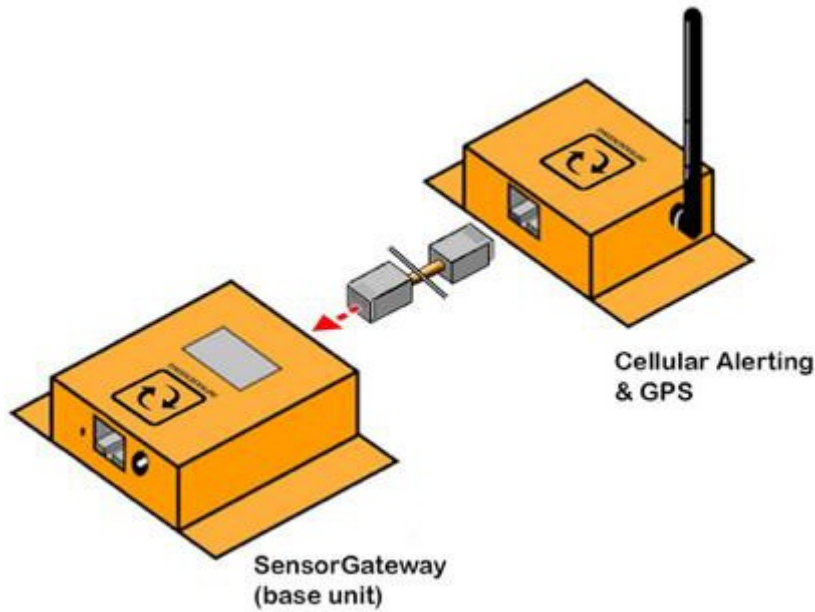
Regulatory approvals: GCF (Global), CE(Europe) , FCC/PTCRB (North America), IC (Canada), Anatel (Brazil), IFETEL (Mexico), SRRC/CCC/NAL (China), KC (South Korea), NCC (Taiwan, China), JATE/TELEC (Japan), RCM (Australia & New Zealand), FAC (Russia), NBTC (Thailand), IMDA (Singapore), ICASA (South Africa)

Note:

The LTE add-on currently does not support cloud data upload and will automatically disable the cloud option when connected.

The LTE add-on is always in offline mode, and it only goes online when data is being sent. It will also disable the default SMS option of

The LTE addon can connect to the Base Unit or Sensorhubs (EXP-4HUB/ EXP-8HUB) in the same convention as our regular sensors.



9.4.1 GUI of the ADDON-LTE

To access the ADDON set up, login to your base unit and go to settings, under settings click Cellular Add-On

Settings & Info

Device information

Account name	admin
	Change Password
Current System Date	08 Feb 2020
Current System Time	01:49:43
	Update Time
Hardware Version	Release 5.1
Firmware Version	Release 8.20 (Feb 7 2020)
	Upgrade Firmware
Mac Address	00:03:64:03:6A:A4
IP Address	192.168.11.60
	Change IP
Node Status (online/used/max)	24/50/51
	Calibrate Sensors
	Cellular Add-On

←

→

↻

Not Secure | 192.168.11.122/lte.html

↻

ADDON-LTE Config

Primary mode

☐

Backup mode

☒

SIM1 PIN

SIM1 APN

SIM1 APN Username

SIM1 APN Password

SIM2 PIN

SIM2 APN

SIM2 APN Username

SIM2 APN Password

Add-on Status

Connected

Last Error

—

Network Status

Active SIM

SIM2

Network Name

GOMO GOMO

Signal Band

LTE

RSSI

14

IMEI

867698040182514

SMS Recipients

Append to SMS this text

Send test SMS

SMTP Server

SMTP Port

Secure connection

Use SMTP Authentication

☐

SMTP Username

SMTP Password

From Email

To Email(s)

Email Subject

Append to Email this text

Send test Email

GPS Status

Fix

No fix

Satellites Found

0

Latitude

0.00000

Longitude

0.00000

Update

Reset

The Image above is the configuration page of the LTE addon and each section will be discussed further.

9.4.2 ADDON-LTE Modes

There are two modes you can set your addon into, the Primary mode and the Backup mode. When set in “Primary mode” the add-on will primarily use the SIM’s data connection to send alerts.

The screenshot shows the 'ADDON-LTE Config' interface. On the left is a sidebar with various configuration sections: Primary mode, Backup mode, SIM1 PIN, SIM1 APN, SIM1 Username, SIM1 Password, Add-on Status, Last Error, Network Status, Active SIM, Network Name, Signal Band, RSSI, IMEI, SMS Recipients, Append to SMS this text, SMTP Server, SMTP Port, Secure connection, Use SMTP Authentication, SMTP Username, SMTP Password, From Email, To Email(s), Email Subject, Append to Email this text, GPS Status, Fix, Sublines Found, Latitude, Longitude, and buttons for Update and Reset. The main area is titled 'ADDON-LTE Config' and features a toggle switch for 'Primary mode' (which is turned on) and 'Backup mode' (which is turned off). Below the toggle are input fields for SIM1 and SIM2 PIN, APN, Username, and Password. The 'Add-on Status' section shows 'Connected' and 'Data connection failed'. At the bottom, there is a 'Send test Email' button and a 'Send test SMS' button. The 'GPS Status' section shows 'Fix', 'Sublines Found', 'Latitude', and 'Longitude'.

When set in “**Backup mode**” the addon uses the SIM’s data connection to send alerts only when your network connection is unavailable. The LTE addon checks for the internal PING parameter to identify if your local Internet is down.

This screenshot shows the same 'ADDON-LTE Config' interface, but with the 'Backup mode' toggle switch turned on and 'Primary mode' turned off. The 'Add-on Status' section now shows 'Connected' and 'Data connection failed'. The rest of the interface, including the sidebar and input fields, remains the same as in the previous screenshot.

As shown on the image below the Internal ping is down, this will then signal the LTE add-on that the local network is down and will now use the SIM's data connection to send alerts.

Sensors

Status	Type	Name	Value
	Temperature	Int. Temp1	32.3 °C
	Ping	Int. Ping1	2000 ms

PING Sensor

In Backup mode, the internal Ping is required to be enabled and ideally input an IP address or website outside of your local network with at least 60sec on the timeout counter like the example below.

Ping Setting

This optional PING sensor enables you to monitor if the IP network link is still reachable. You can check against an internal IP address to see if the internal network is still operational. If the device can connect to the internet, then you can also use a public IP.

Enable Ping sensor



Domain name OR IP address

www.serverscheck.com.

Ping timeout

60



sec

Update

Reset

Note: The LTE add-on does not provide Internet connection for your base unit and that data connection will only be used for sending alerts via the LTE add-on configuration. With that in mind the Ping parameter will still be down until your local Internet is restored.

9.4.3 Setting up data connection

Data settings for your SIM include the APN, PIN, Username and Password. If any of the given are not applicable then we can just leave it blank.

We suggest performing a test mail to make sure you have data connection and that your APN is correct.

9.4.4 SIM section

Following the data settings is the SIM information and SMS settings

ADDON-LTE Config

Primary Mode: ☐ ON

Backup Mode: ☐ OFF

SIM PIN:

SIM APN:

SIM Username:

SIM Password:

App on Status: ☐ ON

Last Error:

Network Status

Active SIM: SIM1

Network Name: T-Mobile

Signal Band: LTE

RSSI: 16

IMEI: 85780307045234

SMS Recipients

Append to SMS this text:

Send test SMS

SMTP Server

SMTP Port: 25

Secure connection: None

Use SMTP Authentication: ☐

SMTP Username:

SMTP Password:

From Email:

To Email(s):

Email Subject: ServersCheck Sensor Alert

Append to Email this text:

Send test Email

GPS Status

Fix: ☐ ON

Subsides Found: ☐ OFF

Latitude:

Longitude:

Update Reset

See section 9.4.7 on how to insert a SIM card and for alerting, see section 4.6

9.4.5 Email section

Next is the Email configuration field (Go to section 4.1 for setting up Email Alerts)

ADDON-LTE Config

Primary Mode: ☐ ON

Backup Mode: ☐ OFF

SIM PIN:

SIM APN:

SIM Username:

SIM Password:

App on Status: ☐ ON

Last Error:

Network Status

Active SIM: SIM1

Network Name: T-Mobile

Signal Band: LTE

RSSI: 16

IMEI: 85780307045234

SMS Recipients

Append to SMS this text:

Send test SMS

SMTP Server

SMTP Port: 25

Secure connection: None

Use SMTP Authentication: ☒

SMTP Username:

SMTP Password:

From Email:

To Email(s):

Email Subject: ServersCheck Sensor Alert

Append to Email this text:

Send test Email

GPS Status

Fix: ☐ ON

Subsides Found: ☐ OFF

Latitude:

Longitude:

Update Reset

9.4.6 GPS section

When you avail of the optional GPS feature you will have the information on the OLED screen of the LTE add-on as well as on the GPS section.

At the bottom most part of the Add-on settings we would see the optional GPS information as well as the update and reset buttons.

ADDON-LTE Config

Primary Mode ☐

Backup Mode ☒

SIM1 PIN: SIM2 PIN:

SIM1 APN: SIM2 APN:

SIM1 Username: SIM2 Username:

SIM1 Password: SIM2 Password:

Add-on Status: ☒ Connected

Last SIM:

Network Status: ☒ Connected

Active SIM:

Network Name:

Signal Band:

RSSI:

GPS Recipients:

Append to SMS this text:

SMTP Server:

SMTP Port:

Secure connection: ☐

Use SMTP Authentication: ☐

SMTP Username:

SMTP Password:

From Email:

To Email(s):

Email Subject:

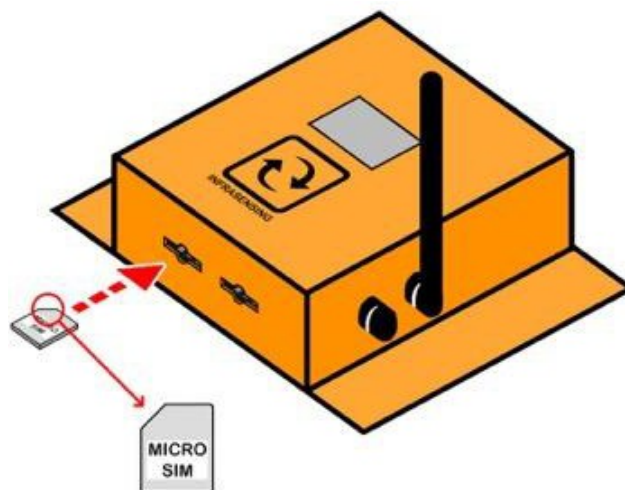
Append to Email this text:

GPS Status

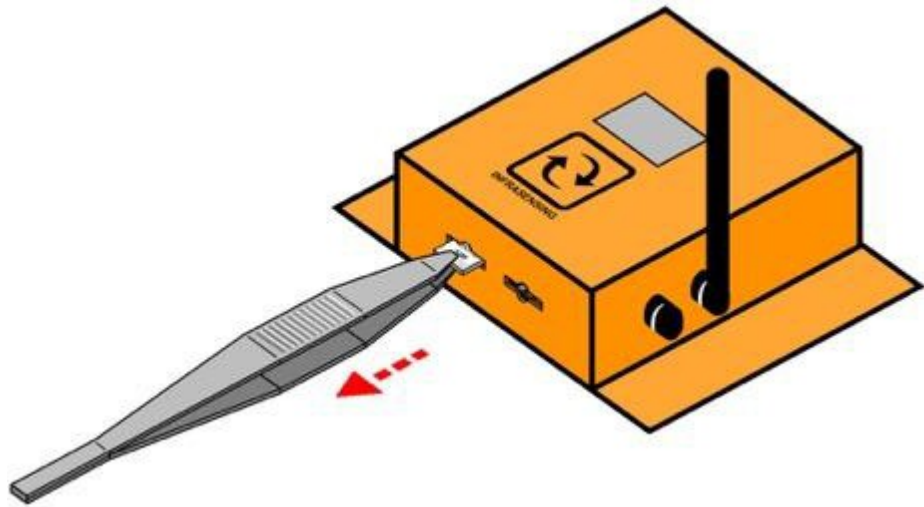
Fix	No fix
Satellites Found	0
Latitude	0.00000
Longitude	0.00000

9.4.7 Inserting the SIM card into the LTE Add-On

1. Insert the SIM card(s) as shown in the image below(SIM card should be inserted all the way to the back).



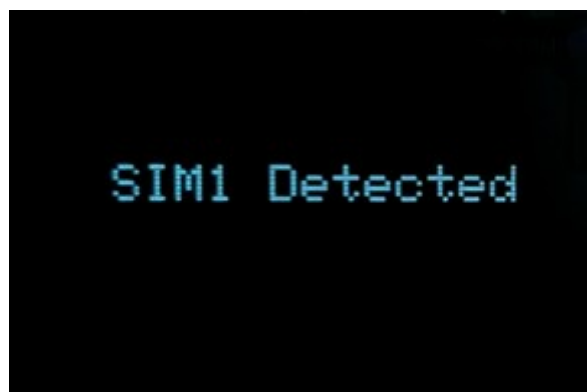
Note: that for security reasons the only way to remove the SIM card is by using tweezers as shown on the illustration below.



2. Connect your ADDON-LTE into your base unit, initialization will start.



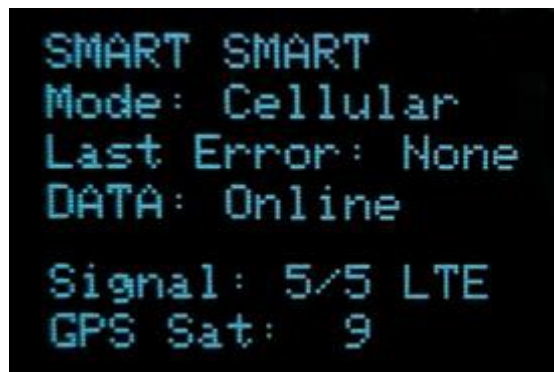
3. If SIM is inserted correctly the device will show that it has been detected and will start to register into your mobile network.



Note: That if it keeps on initializing and does not go to “Registering to network” then it means that the SIM card is not well inserted.

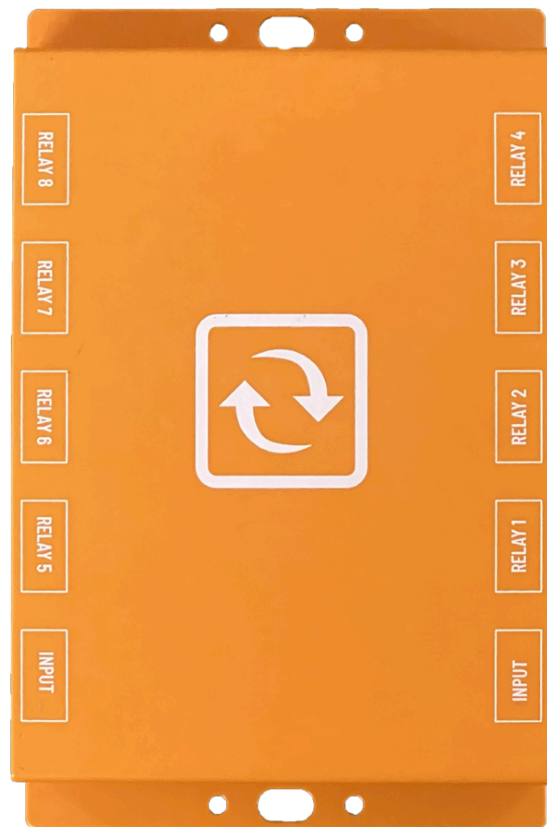


4. After the device successfully registers, it will have the default screen below showing the status of your ADDON-LTE.



5. If you have the optional GPS feature then please allow 5-10 minutes before the GPS signal is established.
6. Your ADDON-LTE will be ready for use, for SMS set up please go to section 4.6 and for email set-up go to section 4.2.

9.5 Relay Add-On (ADDON-8RELAY)



Designed to offer an additional 8 relay outputs and 4 dry contact inputs, this module is also equipped to detect malfunctioning relays, ensuring enhanced functionality and reliability.

Relay outputs: 8
Dry contact input: 4 (Triggering options: Reay / NPN or N-channel mosfet / Open Drain / Open Collector)
Relay contact rating: 125V AC 0.5A / 30V DC 1A

Powered by and communicates with: Base Unit (BASE-XX) (required); Max 1 per Base Unit
Connectivity: RJ45 cable transmitting data & power from Base Unit t sensor
Cable specification: RJ45 CAT 6/7 recommended; Up to 100m (330ft) subject to cable quality & interference
Power usage: 240 to 2100MW

Operating temperature range: 0°C to +75°C (32°F to +167°F)
Humidity (operating and storage): <90% rH (non-condensating)

Important note:

On the ADDON-8RELAY, the terminal block under the **INPUT** section is designated for **Dry Input 1 (DI1)**, **Common (COM)**, and **Dry Input 2 (DI2)**.

10 InfraSensing Sensor Probes

10.1 External sensor probes



InfraSensing uses external sensor probes for its environmental monitoring solution.

Only the power sensor requires a power adapter plugged into it; the power adapter's current sent to the sensor will be used to analyze the power state.

You can replace the shipped RJ45 cable with a custom standard RJ45 for a length of up to 10 meters or 33 ft between the Base Unit and an external probe. And can go longer with the use of CAT6/ CAT7 cables for up to 100m or 330 ft.

10.2 General instructions

The sensor should be connected as shown in the picture below. The RJ45-to-RJ45 cable goes from the external sensor probe into the bottom of the Base Unit using the RJ45 connector labeled **Serial** (for Base Unit v1, v2 & v3) Base Unit v4 or higher have 2 connectors for external probes labeled **Probe1** and **Probe2**



On the top you plug in your network cable connected to a switch and this into the RJ45 connector labeled **LAN/PoE**. If you don't have a PoE enabled network, then you will need the optional 12DC power adapter and plug it into the connector on top labeled **DC 12V**.



Important note: It is highly recommended to reboot the Base Unit after adding or removing any sensor probes for stability. Also, using incorrect power supplies or wrong PoE source may permanently damage the equipment and void the warranty.

11 THERMOGRAPHY SENSORS

11.1 Thermography Sensor (THIMG-XX)

The world's first SNMP & Modbus temperature monitoring sensor that tells you what it actually sees. 192(XS), 768(S), 4800(M), or 19200(L) temperature measurement points in one image, analyzed every 2 seconds.



THIMG-XS
THIMG-SM



THIMG-ME
THIMG-LG-2

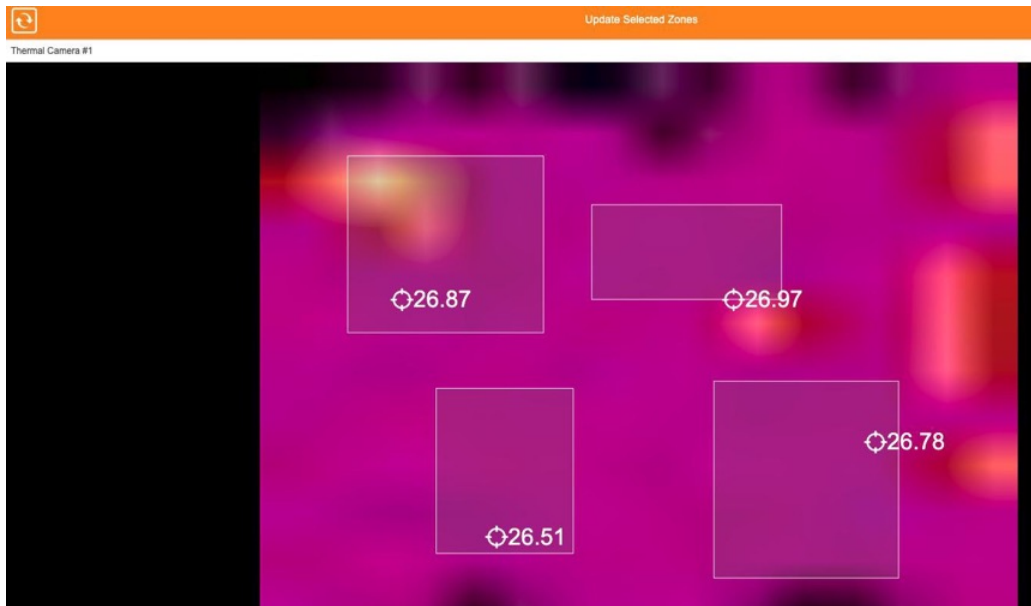
Note:

Also, with the SwitchMon Mobile App (APP-SWITCHMON), you can monitor and configure your THIMG-XX sensor.

The SwitchMon Mobile App (APP-SWITCHMON) is a dedicated companion tool designed to simplify field access, configuration, and monitoring of THIMG-XX sensors. Optimized for Android devices and used in conjunction with the AX-USB-RJ45-SM communication adapter, the app enables real-time thermal image viewing, video recording of the thermography image for auditing, zone monitoring and configuration access.

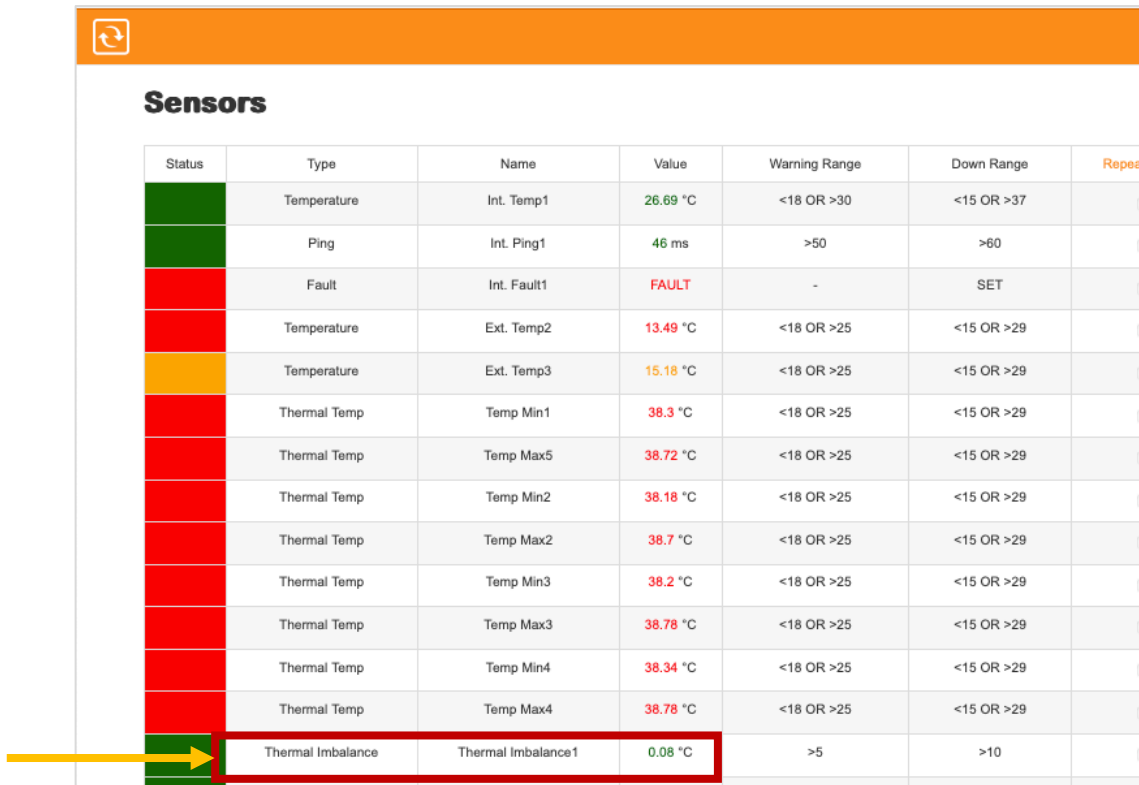
11.1.1 Installation of Thermal Image

Once the Thermal Sensor is plugged in, you should see a button on the gateway's GUI named "Thermal Camera" (firmware 8.0 and above). Once you click the option you will see the live feed of your thermal camera.



With firmware version 9, the Base Unit can connect up to 5 Thermal Imaging Sensors provided that they are connected to the high-speed ports (1, 2, 3, 4, and 7) of the SensorHub.

With the latest firmware version 9.1, the device is now capable of measuring thermal imbalances, which represent the difference between the highest maximum and lowest maximum temperatures.



Status	Type	Name	Value	Warning Range	Down Range	Repeat
	Temperature	Int. Temp1	26.69 °C	<18 OR >30	<15 OR >37	
	Ping	Int. Ping1	46 ms	>50	>60	
	Fault	Int. Fault1	FAULT	-	SET	
	Temperature	Ext. Temp2	13.49 °C	<18 OR >25	<15 OR >29	
	Temperature	Ext. Temp3	15.18 °C	<18 OR >25	<15 OR >29	
	Thermal Temp	Temp Min1	38.3 °C	<18 OR >25	<15 OR >29	
	Thermal Temp	Temp Max5	38.72 °C	<18 OR >25	<15 OR >29	
	Thermal Temp	Temp Min2	38.18 °C	<18 OR >25	<15 OR >29	
	Thermal Temp	Temp Max2	38.7 °C	<18 OR >25	<15 OR >29	
	Thermal Temp	Temp Min3	38.2 °C	<18 OR >25	<15 OR >29	
	Thermal Temp	Temp Max3	38.78 °C	<18 OR >25	<15 OR >29	
	Thermal Temp	Temp Min4	38.34 °C	<18 OR >25	<15 OR >29	
	Thermal Temp	Temp Max4	38.78 °C	<18 OR >25	<15 OR >29	
	Thermal Imbalance	Thermal Imbalance1	0.08 °C	>5	>10	

Thermal Imbalances = highest maximum - lowest maximum
Based on the image above the thermal imbalance is 0.08°C

NOTE: Due to transit or unforeseen events, in rare occasions the values of thermal camera sizes M and L are not displayed. This is possibly due to the sensor getting slightly loose. This is remedied by pressing down on the lens assembly in front of the case to reseat it in its socket.

Link : <https://infrasing.com/sensors/sensor-thermal-image-temperature.asp>

11.1.2 Setting the Thermal Emissivity

After installing the thermal sensor, ensure that the **thermal emissivity** is properly configured to achieve accurate temperature readings.

By default, the emissivity value is set to **0.95**, which is suitable for most non-reflective surfaces. However, the optimal setting may vary depending on the type and finish of the surface being monitored by the **THING** sensor.

Failure to properly calibrate the emissivity may result in **inaccurate temperature measurements** or **incorrect readings** from the THING sensor.

To configure the Thermal emissivity, go to settings & info, and click on Calibrate Sensors.

Settings & Info

Device Information
Account name

Current System Date
Current System Time

Hardware Version
Firmware Version

Serial Number
Mac Address
IP Address

Node Status (online/used/max)

admin

Change Password

05 Jan 2021

01:31:31

Update Time

Release 5.1

9.3.1-SAFETY (Jun 4 2025)

Upgrade Firmware

20250604000364034E80

00:03:64:03:4E:80

192.168.11.131

Change IP

11/21/102

Clear Nodes

Calibrate Sensors

Once you click **Calibrate Sensors**, the system will redirect you to the calibration page. Locate the **Thermal Emissivity** section, where you can adjust the emissivity value according to the type and surface finish of the area being monitored by the **THING** sensor, and click on Update once done.

Sensor Calibration

Sensor Type	Example Value	Operator	Offset value
InternalTemp	25.39 °C	+	0.00
ExternalTemp	? °C	+	0.00
ExternalHumd	? %RH	+	0.00
Fuel Level Max	?	=	1023.00
Fuel Level Min	?	=	0.00
Flow Rate Period (min)	5	-	5
Air Flow Threshold	?	>	20.00
Shock Threshold	?	>	765.00
Temp Threshold	0.00	-	0.00
Humidity Threshold	0.00	-	0.00
AC Voltage Type	☒ 220/240	☐ 110/120	-
AC Voltage Offset	?	+	0.00
Sync Internal Temp Sensor with External	☐		
Thermal Emissivity (0.01-1)	0.95		
Power Supply	230 Volts / 60 Hz		
Reset 3-Phase Power Meter Counter	Reset Counter		
Reset Power Meter Total kWh Reading	Reset Reading		
Reset Tilt Sensor Values	Set to Zero Reset to Default		
Turn Panel Fan	On Off		
DC Power Control Sensor:			
Minimum(7-89) / Maximum(10-90) Voltage	-	7.00	48.00
Minimum(0-89) / Maximum(0.1-90) Current	-	1.00	50.00
Minimum Time to detect error (0-120s)	-	-	10.00
Reset Counter	Reset Counter		

Configure Sensor

Update Reset

The table below lists some of the most common materials along with their typical emissivity values. For critical equipment or specific applications, it is recommended to **consult the manufacturer** to verify the exact material type and its corresponding emissivity value.

Disclaimer: The data provided in the table represents **general reference values** and is **not exhaustive**. Actual emissivity may vary depending on surface condition, finish, and environmental factors.

Material	Surface Condition	Approx. Emissivity (e)
Painted steel (matte black or gray)	Painted / oxidized	0.90 - 0.95
Bare steel	Polished	0.20 - 0.30
Galvanized steel	Slightly oxidized	0.28 - 0.35
Copper (bare)	Polished	0.20 - 0.30
Copper (oxidized)	Oxidized / tarnished	0.50 - 0.65
Brass	Polished	0.30 - 0.40
Aluminum (bare)	Polished	0.05 - 0.10
Aluminum (oxidized)	Oxidized	0.20 - 0.30
Plastic (ABS, PVC)	Smooth	0.90 - 0.95
Rubber insulation	Matte	0.90 - 0.95
Epoxy resin	Smooth	0.85 - 0.95
Porcelain / Ceramic	Glazed	0.85 - 0.95
Glass	Smooth	0.85 - 0.90
Painted metal (light color)	Glossy	0.80 - 0.90
Paper / Labels	Matte	0.90 - 0.95

11.1.3 Adding Zones to the Thermography Sensor Camera

From firmware version 8.8, you can add zones within the thermal view page to specifically pinpoint the highest temperature recorded in each zone.

To add a zone, please follow these steps :

1. On the main screen, click Thermal Camera and you will be redirected to the thermal view page.
2. You can add up to 4 zone. To add a zone, simply highlight an area within the camera view w.
3. Once done, click “Updated Selected Zones”

11.1.4 Delete Zones from the Thermal Imaging Sensor

1. On the Thermal View, press middle-click (scroll button) on your mouse to delete a zone.
2. Once done, click “Updated Selected Zones”

11.2 Cylindrical Thermography Sensor (C-THIMG-SM) (C-THIMG-XS)



The C-THIMG-XX is a compact thermal imaging sensor designed exclusively for fire detection applications, delivering comprehensive thermal monitoring through 768 (C-THIMG-SM), and 192 (C-THIMG-XS) discrete temperature measurement points and two reporting zones

The sensors are powered by and communicate with the R-CHUB-3R (required). It connects to the R-CHUB-3R via female connector.

11.3 Industrial Spot Sensor (THIMG-IRSPOT)



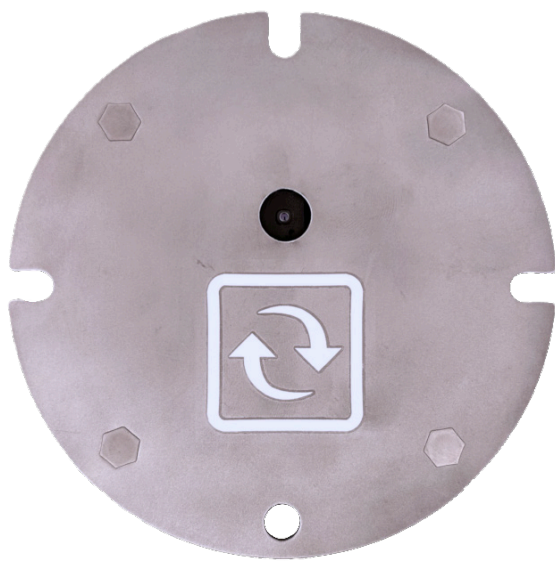
Works by capturing the emitted infrared radiation within a wide field of view (90°)

11.4 Industrial Infrared Spot Sensor – Cylindrical Series (C-THIMG-IRSPOT)

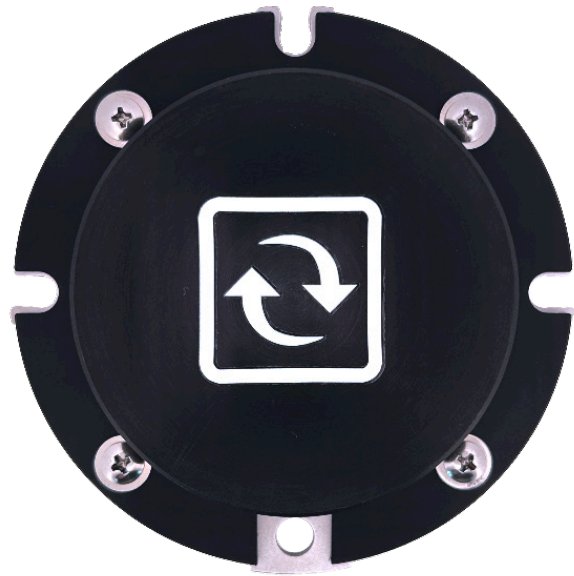


The C-THIMG-IRSPOT is an industrial digital SNMP & Modbus TCP sensor designed for contactless temperature monitoring inside enclosures. It offers a flexible and scalable solution with an optional daisy chain configuration, supporting up to 20 IR Spot sensors per Base Unit. This makes it ideal for comprehensive temperature management, whether monitoring individual components or entire systems within industrial enclosures

11.5 Thermography IR Window Mount (THIMG-MNT-VPTXX)



Front View



Back View

The thermography IR window mount is designed for retrofitting existing switchgear, transformers, and busbar infrared inspection windows, enabling continuous compliance with NFPA 70B thermography requirements. It requires a THIMG-XX thermal imaging sensor (sold separately) to operate.

Dimensions	VPT75	Ø120mm (4.72") x 30 mm (1.18")
	VPT100	Ø146.75mm (5.78") x 34.11 mm (1.34")
Weight	VPT75	332g (0.73 lbs.)
	VPT100	565g (1.25 lbs.)

12 Gas Sensors

12.1 VOC, Temperature and Humidity Sensor (GAS-VOC)



Designed for monitoring off-gas in battery systems. Measures Volatile Organic Compound(VOC), Temperature and Humidity.

12.2 Flammable Gas Sensor (R-GAS-FLAMMABLE)

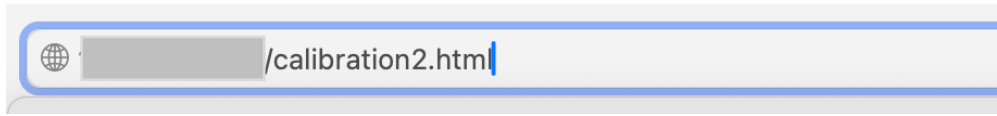


Calibration free flammable RS485 version gas sensor that is specifically designed to detect the presence and measure the concentration of specific gases in nonhazardous critical facilities. User settable address (RS485) out of 256 possibilities

Internal temperature accuracy:	$\pm 0.48^{\circ}\text{C}$ (0.86°F)
Internal relative humidity accuracy:	0 to 100% RH
VOC measurement output range:	0-500 VOC Index
VOC repeatability:	$<\pm 5$ VOC index points or % mass volume (m.v.)
Butane (C_4H_{10}) accuracy:	$\pm 5\%$ LEL
Ethane (C_2H_6) accuracy:	$\pm 5\%$ LEL
Hydrogen (H_2) accuracy:	$\pm 5\%$ LEL
Isobutane (CH_3) accuracy:	$\pm 5\%$ LEL
Methane (CH_4) accuracy:	$\pm 5\%$ LEL
Octane (C_8H_{18}) accuracy:	$\pm 12\%$ LEL
Pentane (C_5H_{12}) accuracy:	$\pm 5\%$ LEL
Propane (C_3H_8) accuracy:	$\pm 6\%$ LEL
Propylene (C_3H_6) accuracy:	$\pm 5\%$ LEL
Toluene (C_7H_8) accuracy:	$\pm 12\%$ LEL
Xylene (C_8H_{10}) accuracy:	$\pm 12\%$ LEL

The relay from the R-GAS-FLAMMABLE sensor can also be used with the Base Unit. To enable this, follow these steps.

1. Access the settings by navigating to **[IP_ADDRESS]/calibration2.html** in your browser.



2. Scroll down until you find the **R-GAS-FLAMMABLE** section.

A screenshot of a web interface for configuring an R-GAS-FLAMMABLE sensor. The page has an orange header bar with a refresh icon on the left and a menu icon on the right. The main content area is white and contains three sections: "Trigger Sources", "Thresholds", and "Modbus Config". The "Trigger Sources" section has three dropdown menus for Relay1, Relay2, and Relay3, all set to "Direct Control", and a "Set Sources" button. The "Thresholds" section has three input fields for Relay 1, Relay 2, and Relay 3, all set to "0", and a "Set Thresholds" button. The "Modbus Config" section has three dropdown menus for Baudrate (9600), Parity (None), and Stop Bits (2), and a "Set Config" button. A red rounded rectangle highlights the "Trigger Sources" and "Thresholds" sections.

3. Under **Trigger Sources**, ensure that all three relays are set to “Direct Control”.

A screenshot of the same R-GAS-FLAMMABLE configuration page, but with a dropdown menu open for the Relay3 trigger source. The dropdown menu lists several options: H2, Temperature, Humidity, VOC, CH4, Direct Control (which is checked with a green checkmark), Fault, and Other Flammable Gas. A red rectangle highlights the dropdown menu, and a red arrow points from the Relay3 dropdown in the "Trigger Sources" section to the dropdown menu. The "Set Sources" button is visible below the dropdown menu.

- Once configured, return to the **Sensor Home Page** and reload the page.
- You should now see the three relays listed under **Control Outputs**.

Sensors

Enable Maintenance Mode

Edit

Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	Alert+	SNMP Trap	Set Output To
	Temperature	Int. Temp1	27.34 °C	<18 OR >37	<15 OR >41	☐	☐	☐	☐	DISABLE v - v
	Ping	Int. Ping1	203 ms	>50	>60	☐	☐	☐	☐	DISABLE v - v
	Ambient VOC	Ambient VOC1	19	>200	>400	☐	☐	☐	☐	DISABLE v - v
	VOC Alarm	Alarm VOC1	OK	-	SET	☐	☐	☐	☐	DISABLE v - v
	VOC Index	VOC Sensor1	19	>100	>400	☐	☐	☐	☐	DISABLE v - v
	H2	H2 Sensor1	0 %LEL	>25	>50	☐	☐	☐	☐	DISABLE v - v
	Temperature	Ext. Temp1	30.04 °C	<18 OR >25	<15 OR >29	☐	☐	☐	☐	DISABLE v - v
	Humidity	Humidity1	44.01 %RH	<45 OR >65	<40 OR >70	☐	☐	☐	☐	DISABLE v - v
	Flammable Gas	Flammable Gas1	0 %LEL	>25	>50	☐	☐	☐	☐	DISABLE v - v

Control Outputs

Edit

Name	Current Value	Default State	Control Output
Relay1	OFF	OFF v	CYCLE v
Relay2	OFF	OFF v	CYCLE v
Relay3	OFF	OFF v	CYCLE v

PING Sensor

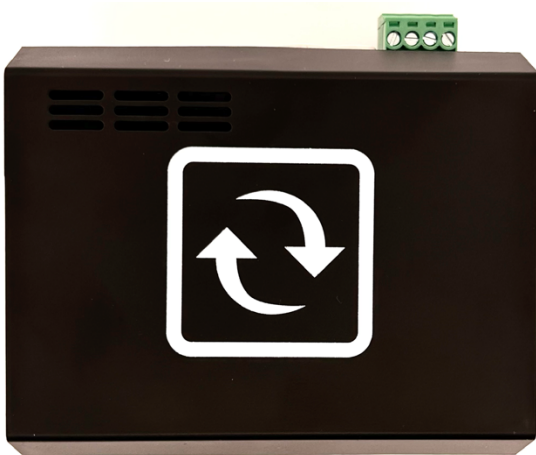
Fault Sensor

Note:

Also, with the Prevent-iON Mobile App (APP-PREVENTION), you can monitor and configure your R-GAS-FLAMMABLE sensor.

The [Prevent-iON Mobile Application \(APP-PREVENTION\)](#) is a dedicated companion tool designed to simplify field access, configuration, and monitoring of Prevent-iON sensors. Optimized for Android devices and used in conjunction with the [AX-USB-RJ45](#) communication adapter, the app enables real-time data viewing, firmware updates, and sensor diagnostics.

12.3 Electrical Smoulder & Pyrolysis Sensor (R-GAS-ELECTRICAL)



Our R-GAS-ELECTRICAL sensor has been designed for early detection of anomalies inside automation and electrical panels. By monitoring factors like VOCs, NO_x, CO, smoke, temperature, and humidity—which are signs of overheating, insulation breakdown, or component failure—it can potentially alert you before minor issues escalate into catastrophic failures.

The R-GAS-ELECTRICAL sensor is **NOT** a life safety or fire safety device and should **NOT** be used as such. It is specifically designed to detect anomalies in electrical and automation panels only.

12.4 Ozone (O₃) Gas Sensor (EGD-O3)



Digital sensor designed for monitoring and measuring the level of Ozone (O₃) in the ambient air.

12.5 Sulfur Hexafluoride (SF6) Gas Sensor (EGD-SF6)



Measures SF6 concentrations up to 1,000ppm (parts per million)

12.6 Refrigerant A1 (R-410A) Gas Sensor (GAS-A1)



Digital sensor designed to monitor refrigerant gas leaks and can measures ASHRAE A1 class refrigerant gas sensor.

12.7 Refrigerant A2L (R-32, R454B, and R454C) Gas Sensor (GAS-A2L)



Measures Refrigerant gas concentrations up to 10,000ppm (parts per million)

12.8 Refrigerant A3 (R-290) Gas Sensor (GAS-A3)



Measures Refrigerant gas concentrations up to 10,000ppm (parts per million)

12.9 Gas Sensor Bump Test

We recommend to periodically test the operation of the gas sensor in critical environments. OSHA defines a bump test as “a qualitative function check in which a challenge gas is passed over the sensor(s) at a concentration and exposure time sufficient to activate all alarm settings.”

Required equipment:

1. Base Unit (BASE-XX)
2. Gas sensor
3. Bump test adapter (SPARE-GAS-GEN-BUMP)
4. Gas canister (from your local gas supplier)
5. Gas tubing (from your local gas supplier)

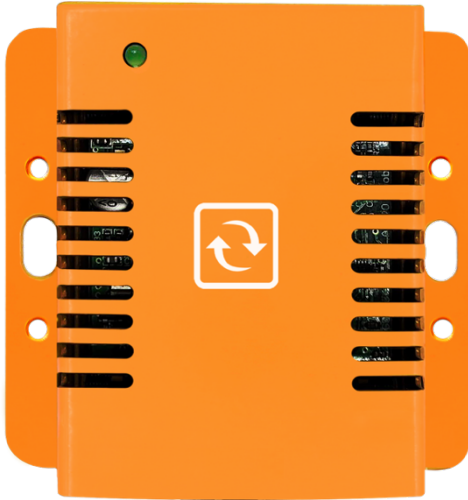
Note: For the amount of pressure, we can only apply up to 1000 PSIG.

Procedure:

1. Connect the Gas sensor to the Base Unit.
2. Next, connect the bump test adaptor to the gas sensor.
3. Attach one end of the tube to the adaptor.
4. Attach the other end of the tube to the gas cylinder source
5. Open the cylinder valve to apply gas until detected.
6. Stop applying gas by closing the cylinder valve.

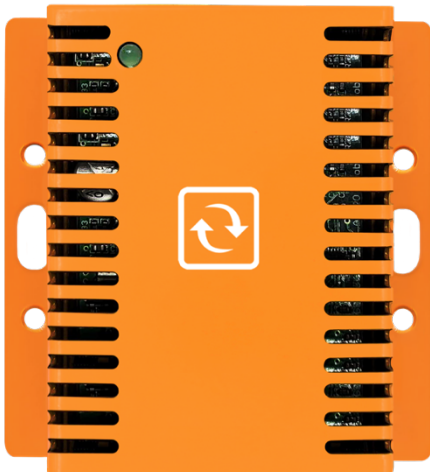
13 Environmental Sensors

13.1 Temperature Sensor (ENV-TEMP)



Designed for indoor use inside data centers, server rooms and cabinets. Optional calibration certificates available.

13.2 Temperature & Humidity Sensor (ENV-THUM)



Designed for monitoring temperature and humidity levels inside data centers, server rooms, cabinets and other critical facilities. Humidity probe made in Switzerland.

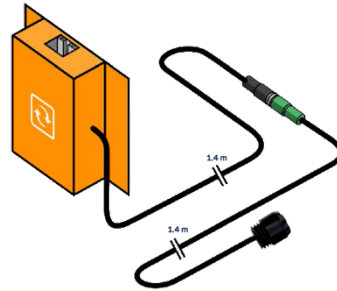
Considerations for humidity sensor:

- Very dependent on air flow
- For rooms with different levels of air flows which is usually those in front of AC units and those that aren't, you can calibrate accordingly for more accurate results of ambient level and rack or other specific point levels of humidity

13.3 ISO 17025 Calibrated Cylindrical Temperature & Humidity (C-ENV-THUM)



The C-ENV-THUM is a cylindrical version of plug & play sensor designed for monitoring temperature & humidity inside racks and hot/cold aisles in data center white spaces by hanging from ceiling.



13.4 Magnetic Surface Temperature Sensor (ENV-TEMP-MAGNETIC)



The magnetic probe can be attached to any metal surface and measure its temperature.

13.5 Digital Sound and Noise level Sensor (dBA) (ENV-NOISE)



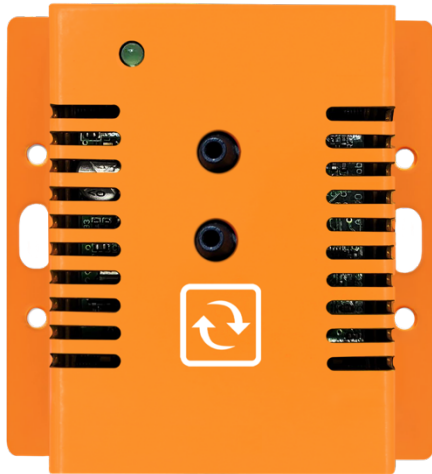
Designed for indoor use, this monitoring system ensures compliance with OSHA regulations and HCAHPS standards by accurately tracking and managing sound and noise levels.

13.6 Atmospheric Corrosion Sensor (ENV-CORROSION)



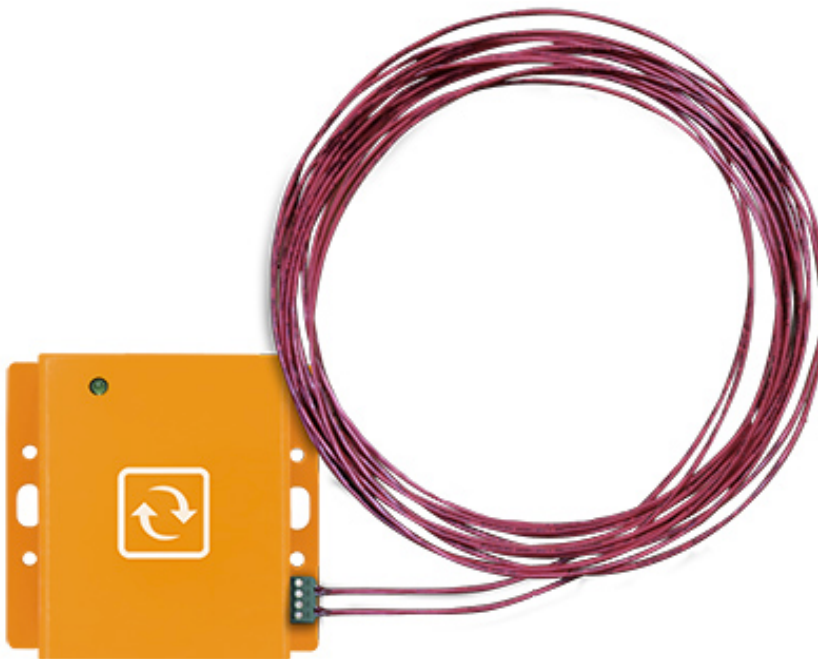
This non-intrusive plug & play corrosion sensor empowers users in mission-critical industries to effectively monitor atmospheric corrosion levels in real time and to compute the G level classification of the monitored infrastructure.

13.7 Differential Air Pressure and Temperature Sensor (ENV-AIRPRESSURE)



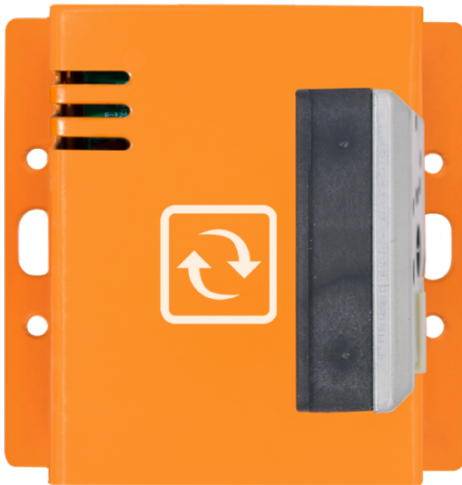
Designed in the USA for monitoring differential air pressure and air temperature in data centers, server rooms, healthcare facilities and other critical facilities. Pressure and temperature sensors are made in Switzerland.

13.8 Linear Heat Detection Sensor (ENV-LHD)



Digital sensor that uses the linear heat cable. This sensor is capable of sensing heat anywhere along the cable and initiate an alarm once it's fixed activation temperature is reached. Unlike the linear heat cables, the senso device is not a fire safety device. It is a temperature limit detection device.

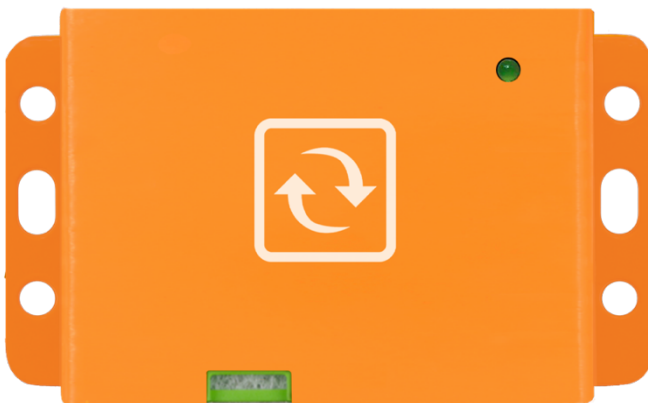
13.9 Optical Dust Sensor Probe (ENV-DUST)



Air Quality (dust) is an invisible threat to Data Centers, server rooms, equipment rooms, telecom shelters, also Haze due to forest fires or fossil fuels is a common source of dust particles. Typically air-conditioning units can purify the air but when high peaks of pollution are reached, then they may no longer cope. Dust deposits on circuit boards can damage it. This may result in permanent loss of IT equipment such as servers, network and storage systems.

Our sensor is designed to monitor dust particles in data centers, server rooms & cabinets.

13.10 Particle Sensor (ENV-PARTICLE)



Designed to provide added value to applications in several industries, including air quality monitoring air purifiers and HVAC.

13.11 Water Leak Location Sensor (ENV-LEAK-LOC2)



The Water Leak Location Sensor is designed to detect leaks or the presence of water in critical facilities. It features reusable sensing cables that are resistant to corrosion and abrasion, approved for installation in both ordinary and hazardous areas. Custom cable lengths of 5m (16.40ft) or 20m (65.62ft) are available on request.

13.12 Acid Battery Leak Sensor (ENV-BLEAK-COMBO)



The Acid Battery Leak Sensor features sensing cables that are highly resistant to corrosion and abrasion, ensuring durability in challenging environments. It is specifically designed to detect and locate the presence of conductive liquids, including most acids, bases, and even deionized water, providing comprehensive monitoring and protection for critical facilities.

13.13 Optical Oil & Hydrocarbon Leak Sensor (ENV-LEAK-OPTICAL)



A reusable, contactless sensor designed to detect liquid hydrocarbon presence on surfaces. Utilized optical sensing to monitor hydrocarbon leaks with the option for calibration to detect surface area.

13.14 Stainless Steel Temperature Probe (ENV-TSTAIN)



The Stainless Steel Temperature monitoring probe was designed to monitor temperature in areas where the other InfraSensing sensors can't be used,

13.15 Extreme Low Temperature Sensor (ENV-TULTRA)



This sensor was designed to monitor temperature in applications where our traditional temperature sensors can't be used. With its IP 66 rated enclosure and stainless steel protected platinum sensor head, this sensor can be used in extreme low temperature environments of up to -200°C (-328°F)

13.16 Industrial Surface Temperature Sensor (ENV-TSURFACE)



Industrial digital SNMP & Modbus TCP sensor designed to be attached to a cable or pipe and monitor its temperature.

13.17 IP Rated sensor assembly (leak. Industrial probes, etc.)

Out from the box, for the Ethernet connector, you should have the 3 parts that are yet to be assembled: the over-nut, rubber gasket, and contracting gland (from left to right).

To get started, insert the over-nut and rubber gasket in your LAN cable then plug it in on the protruding RJ 45 connector from the sensor probe.



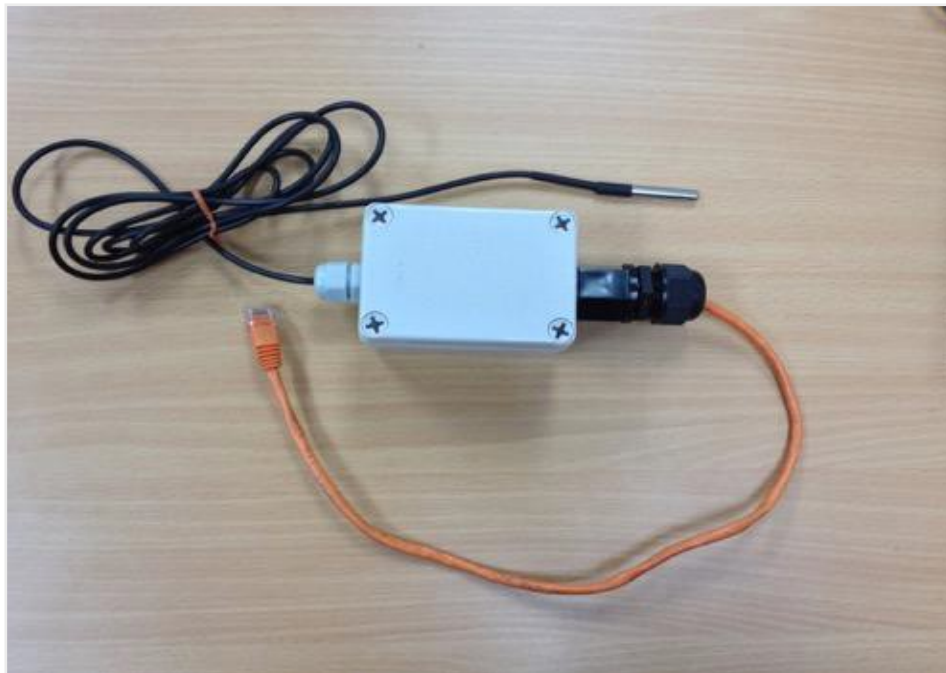
Once that's done, insert the rubber gasket all the way inside the over-nut.



After that, connect them both on the RJ 45 connector of the sensor.



Now that we have that, we just need to insert the contracting gland to seal the Ethernet passthrough. Your stainless steel temperature sensor should now look similar to the following image.



13.18 Water Spot Detection Sensor (monitors a specific spot) (ENV-WSPOT)



The water spot sensor is used in applications where the water leak sensor can't be deployed. Detects water from the location where it is placed wherein water makes contact to the 2 rods.

Note: Once an alert is triggered using our water spot detection sensor, make sure the metal prongs are dried before reusing.

13.19 View of the Airflow Sensor (ENV-AIRFLOW)



The displayed side will be the one where the air should be allowed to flow. As an example, on an environment where floor cooling is utilized, the implementation would be similar to the ff. figure:



As we're utilizing floor cooling on this example, the side where the air should flow is placed facing downwards to detect the airflow it should have.

14 Daisy Chain



This icon represents sensors with the optional Daisy Chain Version.

Please upload the special firmware to your Base Unit (BASE-XX) for the daisy chain sensors to work. You may download the firmware here [Daisy Chain Firmware](#)

Please refer to **section 1.12** on how to properly upload the firmware.

14.1 Daisy Chain Temperature and Humidity Sensor (DAISY-THUM)



Designed for monitoring temperature and humidity levels within critical facilities such as data centers, server rooms, and cabinets. Also, has the capacity of up to 20 sensors when using DAISY-STARTER with FW 1.2 or lower and up to 40 sensors when using DAISY-STARTER with FW 1.5 or higher

14.2 ISO 17025 Calibrated Cylindrical Daisy Chained Temperature & Humidity (C-DAISY-THUM)



Plug & play sensor designed for monitoring temperature & humidity inside racks and hot/cold aisles in data center white spaces by hanging from ceiling. Using a 1.4m cable, the sensor connects to a T-daisy chain connector (included).

14.3 Daisy Chain Gas VOC Sensor (DAISY-GAS-VOC)



The DAISY-GAS-VOC is a specialized sensor solution designed for monitoring off-gas emissions in battery systems. It provides reliable detection and measurement of Volatile Organic Compounds (VOC), while also tracking temperature and humidity to ensure comprehensive environmental monitoring. For expanded coverage, the system supports daisy-chaining of multiple DAISY-VOC sensors, with capacity depending on the DAISY-STARTER firmware version—up to 25 DAISY-GAS-VOC sensors for firmware 1.7 and above, and up to 13 DAISY-GAS-VOC sensors for firmware 1.4 and below.

14.4 Daisy Chain Temperature Magnet Sensor (DAISY-TEMP-MAGNET)



This sensor was designed to monitor temperature in applications where our traditional temperature sensors can't be used. The magnetic probe can be attached to any metal surface and measure its temperature and has a high temperature silver plated shielded wire with strong magnetism and strong absorption.

14.5 Daisy Chain Starter (DAISY-STARTER)



The DAISY-STARTER serves as the controller for the daisy-chained sensors. It is required for all our daisy chain sensors.

Note:

The DAISY-STARTER cannot be connected to Sensorhub (EXP-8HUB) and Multi-Sensor & Hub (EXP-4HUB)

Only one DAISY-STARTER can be connected to one Base Unit (BASE-XX).

14.6 Daisy Booster (DAISY-BOOSTER)



The DAISY-BOOSTER extends the operating length of the daisy chain sensors from 100 meters up to 200 meters. It is connected between 2 sensors on the daisy chain for those applications where the standard total length of 100m/300ft for a daisy chain is too short.

You can add a DAISY-BOOSTER anywhere on your daisy chain. When adding a booster, be sure to pay attention to the color indications to ensure that it is properly connected. It has a led to show optimal placement of DAISY-BOOSTER.

Color Indicator :

Red		The placement of the Daisy Booster is not optimal
Yellow		The placement of the Daisy Booster is fairly good
Green		The placement of the Daisy Booster is optimal

14.6.1 Connecting Daisy Chain Sensor

The ports on DAISY-STARTER and DAISY SENSORS are labeled “IN” and “OUT”. This is to ensure that you are connecting each device accordingly. See images below for reference.

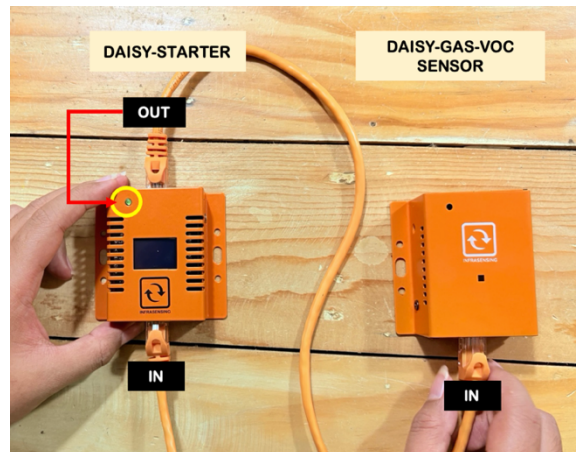


Images above shows the IN and OUT ports labeled on your sensors.

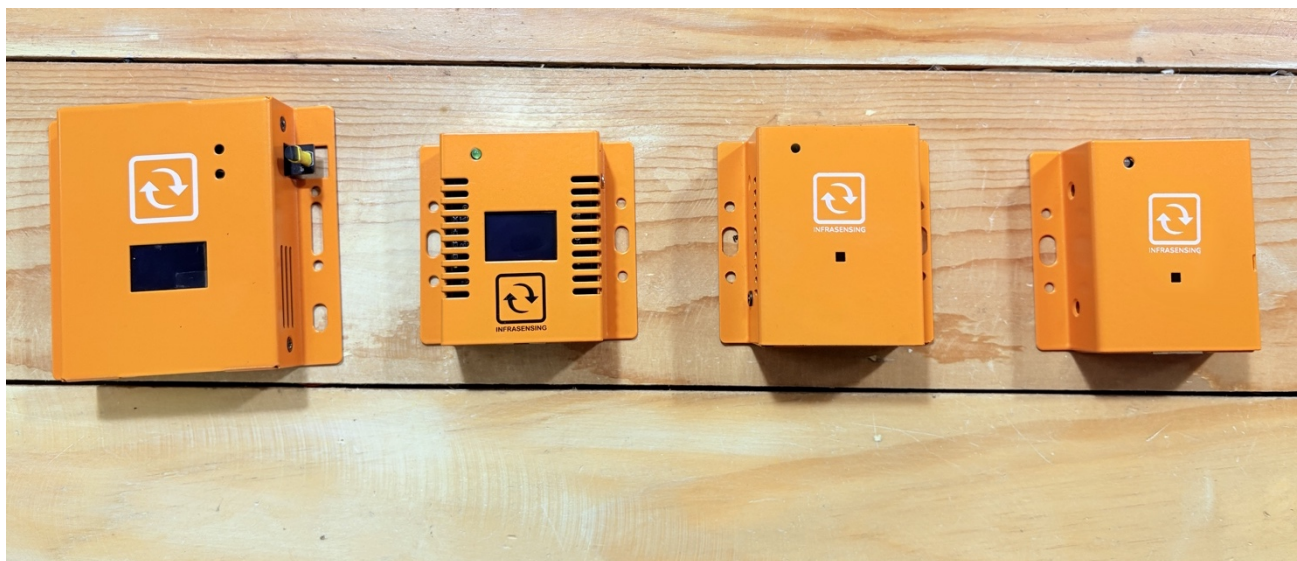
IMPORTANT NOTE:

The port positioned next to the LED indicator should always be treated as the OUT port. If a label indicates IN but the port is beside the LED indicator, the label should be disregarded—its function remains OUT.

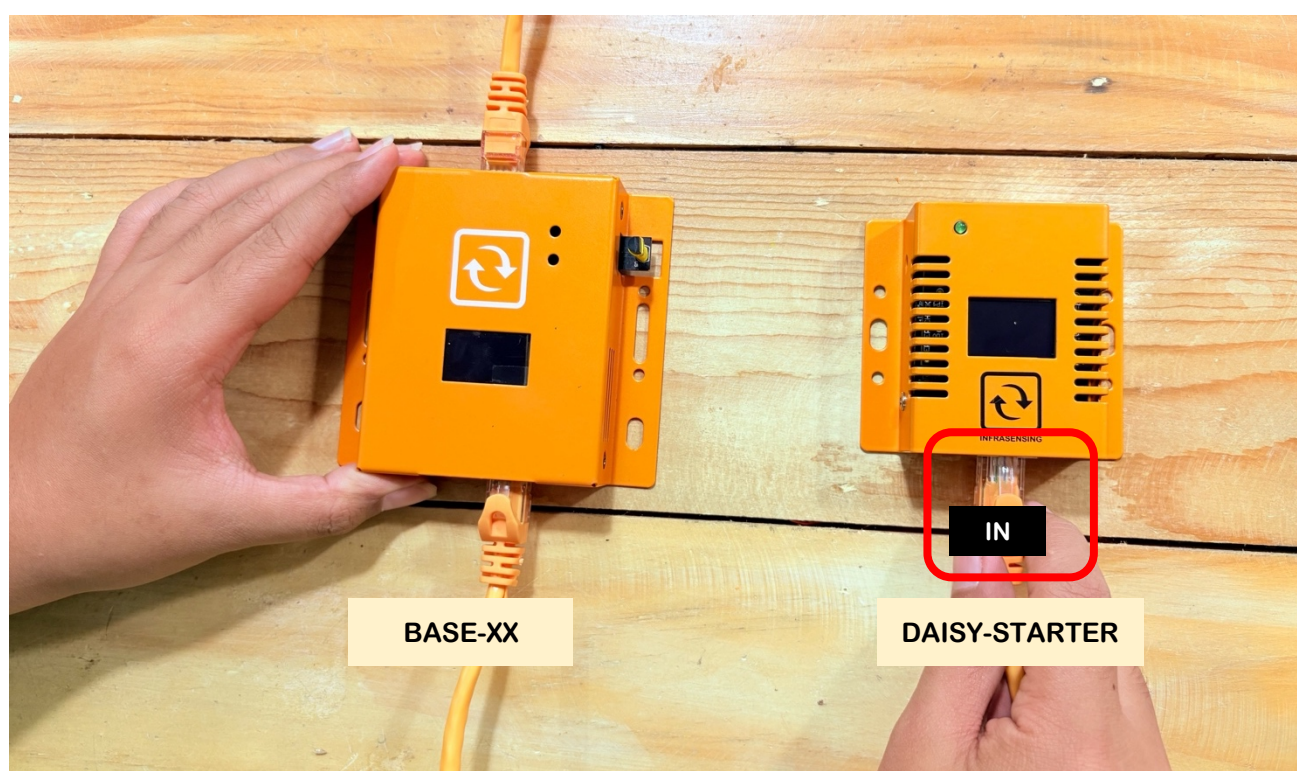
It is a must to follow the connection pattern exactly as shown in the diagram above. Always connect the OUT port of one device to the IN port of the next device. Never connect OUT to OUT or IN to IN, as doing so will cause the sensors to stop working and may result in permanent damage. Always double-check all connections before powering on the system. Failure to follow this may damage your sensors and the entire system.



Before proceeding, it's important to prepare all the necessary devices. Ensure that you have both the BASE-XX and DAISY-STARTER devices on hand. Keep in mind that each BASE-XX can only connect to one DAISYSTARTER. Please see the example below.



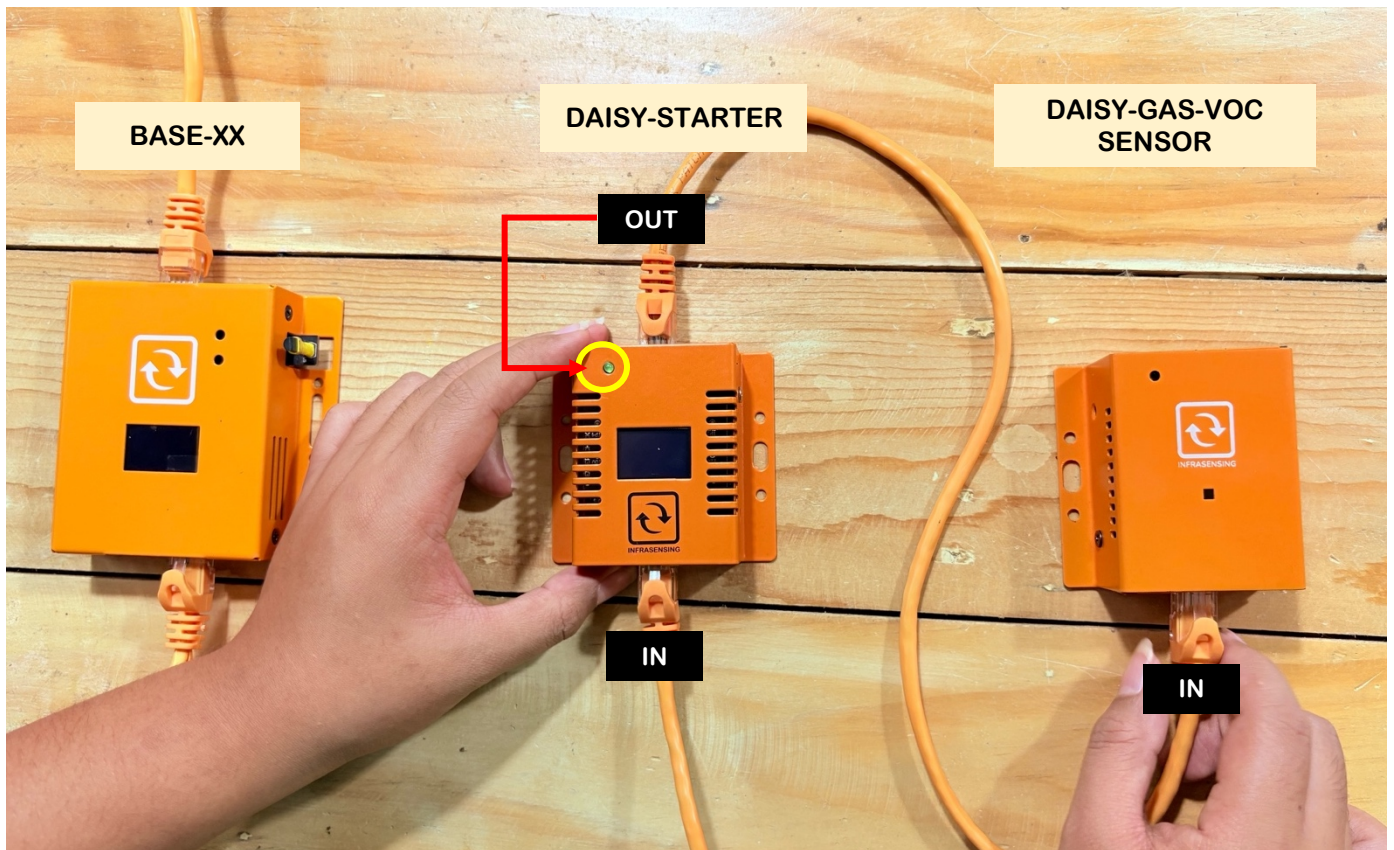
First, connect your BASE-XX to your DAISY-STARTER using a regular RJ45 cable. Refer to the image below for reference :



Once you have connected the BASE-XX and DAISY-STARTER, it's time to connect the DAISY-GAS-VOC sensor. Begin by locating the OUT port on the DAISY-STARTER and the IN port on the DAISY-GAS-VOC sensor. These ports are typically labeled for easy identification.

Next, take a regular RJ45 cable and connect one end to the OUT port on the DAISY-STARTER and the other end to the IN port on the DAISY-GAS-VOC sensor. Ensure that the cable is securely plugged in on both ends to establish a stable connection. Please refer to the image below for reference.

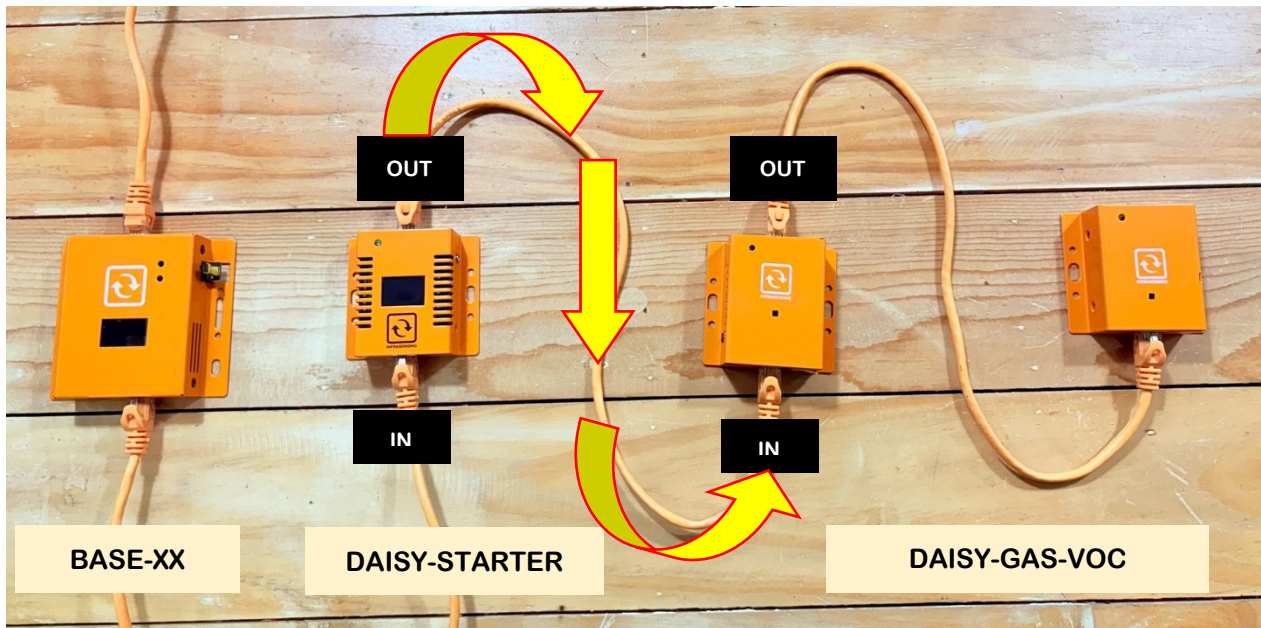
Take care not to force the cable into the ports, and avoid pulling on the cable once it is connected. Once the connection is established, you're ready to move on to the next step.



IMPORTANT NOTE:

- **Never connect the DAISY-STARTER or DAISY-GAS-VOC sensor directly to a PoE switch.** Doing so may supply the incorrect voltage and **cause permanent damage** to the unit.
- Direct connection of the DAISY-GAS-VOC to network equipment (switches, routers, PoE injectors, Base Unit) may lead to irreparable damage.
- The DAISY-GAS-VOC sensor must **only be connected through the DAISY-STARTER and Base Unit** as described in the manual.

Now that you've successfully connected the first DAISY-GAS-VOC sensor, you can repeat the same process for any additional sensors you have. Remember to locate the OUT and IN ports labeled on each sensor.



Using a regular RJ45 cable, connect the OUT port of the first sensor to the IN port of the next sensor. Keep repeating this process until all of your sensors are connected.

Make sure to refer to the diagram below for guidance. It's important to ensure that all sensors are securely connected and that the cables are not tangled or stretched too far.

NOTE:

The number of DAISY-GAS-VOC sensors that can be connected in sequence depends on the **DAISY-STARTER firmware version**. A DAISY-STARTER running firmware **1.7 and above** can connect up to **25 DAISY-GAS-VOC sensors**, while firmware **1.4 and below** supports up to **13 sensors**. Installations requiring more sensors can be expanded with a **DAISY BOOSTER** to maintain reliable performance.

14.6.2 Powering up Daisy Chain Sensor

Once the **daisy-chain connection of your DAISY-GAS-VOC sensors** has been properly set up, the next step is to power up the system. The **BASE-XX unit** serves as the central hub, and it must be powered on before the sensors can begin operation.

There are several options available for powering your Base Unit, depending on your setup and available resources:

For BASE-5:

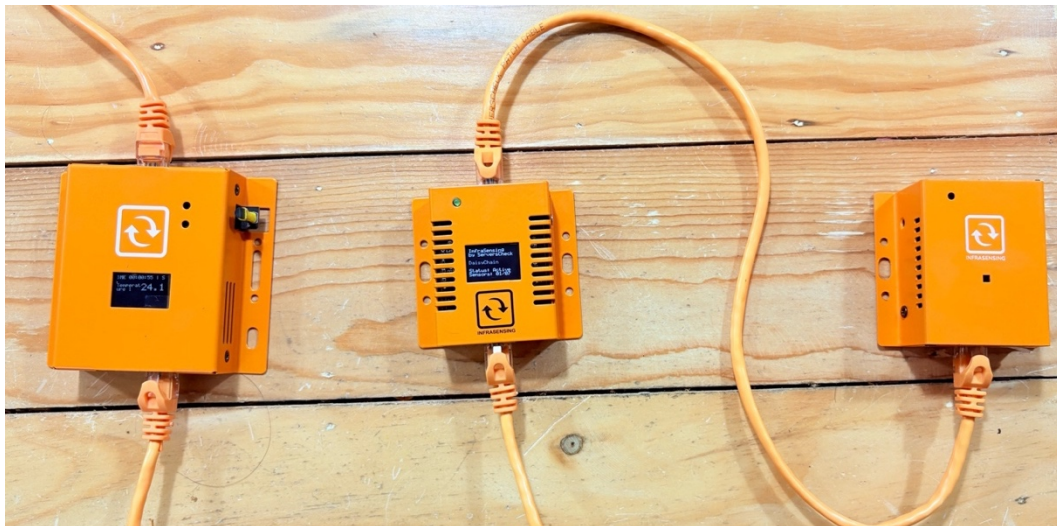
1. **PoE (Power over Ethernet):** Power the Base Unit directly through the Ethernet cable.
2. **BASE-PWR:** Use a power adapter to connect the Base Unit to a standard electrical outlet.
3. **BASE-PWR-USB:** If no outlet is available, power the Base Unit using a USB cable connected to a computer or other USB-enabled device.
4. If you are going to use your own power adapter, it should have 12V output 1A.

DISCLAIMER: For installations requiring more than 10 sensors, the use of a BASE-PWR unit is mandatory to ensure proper power distribution and reliable operation.

For BASE-PI-5-24V:

1. **PoE (Power over Ethernet):** Power the Base Unit directly through the Ethernet cable.
2. **24V DC Source via Terminal Block:** Connect the Base Unit to a regulated 24V DC power supply. Ensure the polarity and voltage match specifications to prevent damage.

This flexibility ensures that the system can be deployed across different environments while maintaining reliable operation.



NOTE: The **connecting cable** between the Base Unit and the DAISY-STARTER must not exceed **2 meters (6.6 ft.)**. Additionally, the **total length of the daisy chain**, including the DAISY-STARTER and Base Unit should not exceed **100 meters**. For longer distances, a **DAISY BOOSTER** may be added to extend the chain while maintaining reliable performance.

14.6.3 Accessing Daisy Chain Connection

Now that your setup is complete and the **Base Unit is powered on**, you can access the Base Unit through its **IP address**. Refer to the device manual or packaging for instructions on how to locate the assigned IP address.

Once you have the IP address, enter it into the address bar of your web browser. This will open the **Base Unit's user interface**, where you can monitor connected sensors, manage configurations, and adjust system settings.



If you have daisy-chained sensors, you may see a new menu that displays all of your connected sensors. Refer to the image below for an example of what this menu might look like. To view details and identify the sensors in your daisy chain, click on **Daisy Chain Information**.

Sensors

Status	Type	Name	Value	Warning Range	Down Range
	Temperature	Int. Temp1	26.97 °C	<18 OR >37	<15 OR >41
	Ping	Int. Ping1	1000 ms	>50	>60

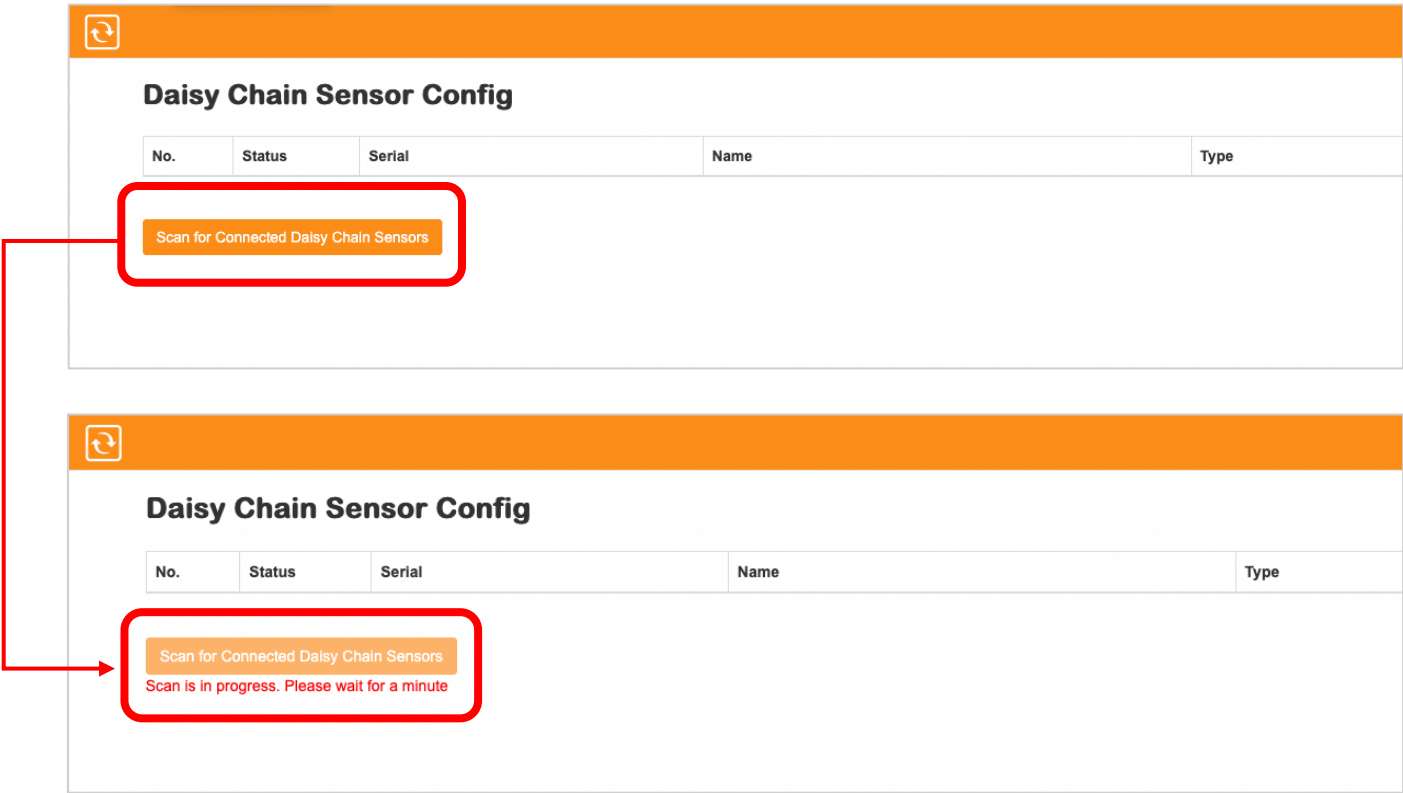
Daisy Chain Information

PING Sensor

Fault Sensor

14.6.4 Scanning for Connected Daisy Chain Sensors

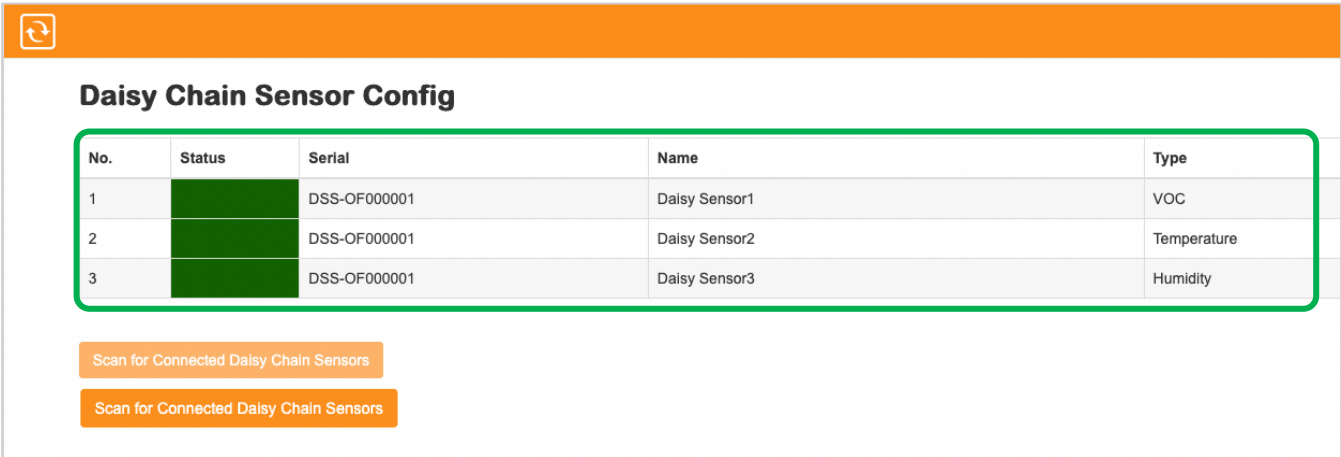
After you click on **Daisy Chain Information**, a pop-up window will appear with the option “**Scan for Connected Daisy Chain Sensors.**” Selecting this option will prompt the Base Unit to scan for all connected sensors, and the process typically completes in less than a minute. If you need to refresh the list, you can perform another scan by clicking the same button again after one minute.



IMPORTANT NOTE:

When scanning **more than 3 daisy chain sensors**, allow at least **3–5 minutes** for the process to complete, as additional sensors may take longer to be detected. If the scan appears too slow or becomes unresponsive, simply reboot or refresh the Base Unit and try again.

If a daisy-chained sensor becomes disconnected, it is recommended to clear all nodes and then rescan the chain to ensure proper detection and communication of all connected sensors.



Once the scanning is complete and you return to the Sensor Home page, you will now see all of your connected Daisy Chain sensors listed. Each sensor will appear along with its corresponding values, allowing you to easily monitor their status and confirm that the devices are properly detected and operational. Based on the example image below, only one DAISY-GAS-VOC sensor is connected, but your setup may display multiple sensors depending on your configuration.

Sensors										
Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	Alert+	SNMP Trap	Set Output To
	Temperature	Int. Temp1	30.77 °C	<18 OR >37	<15 OR >41	☐	☐	☐	☐	DISABLE v - v
	Fault	Int. Fault1	FAULT	-	SET	☐	☐	☐	☐	DISABLE v - v
	VOC Imbalance	VOC Imbalance1	104	>100	>300	☐	☐	☐	☐	DISABLE v - v
	Ambient VOC	Ambient VOC1	53	>200	>400	☐	☐	☐	☐	DISABLE v - v
	VOC Alarm	Alarm VOC1	OK	-	SET	☐	☐	☐	☐	DISABLE v - v
	VOC	Daisy Sensor1	105	>100	>400	☐	☐	☐	☐	DISABLE v - v
	Temperature	Daisy Sensor2	26.5 °C	<18 OR >25	<15 OR >29	☐	☐	☐	☐	DISABLE v - v
	Humidity	Daisy Sensor3	71 %RH	<45 OR >65	<40 OR >70	☐	☐	☐	☐	DISABLE v - v
	VOC	Daisy Sensor4	1	>100	>400	☐	☐	☐	☐	DISABLE v - v
	Temperature	Daisy Sensor5	0 °C	<18 OR >25	<15 OR >29	☐	☐	☐	☐	DISABLE v - v
	Humidity	Daisy Sensor6	0 %RH	<45 OR >65	<40 OR >70	☐	☐	☐	☐	DISABLE v - v

	Ambient VOC	Ambient VOC1	53	>200	>400	☐
	VOC Alarm	Alarm VOC1	OK	-	SET	☐
	VOC	Daisy Sensor1	105	>100	>400	☐
	Temperature	Daisy Sensor2	26.5 °C	<18 OR >25	<15 OR >29	☐
	Humidity	Daisy Sensor3	71 %RH	<45 OR >65	<40 OR >70	☐

15 Power Sensors

15.1 View of DC Voltage Sensor (12-80V) (PWR-DC-VOLT)



DC voltage measurement & failure monitoring sensor. Designed for industrial +24v environments and -48v telecom infrastructure.

15.2 View of Current Sensor (PWR-AC-CUR)



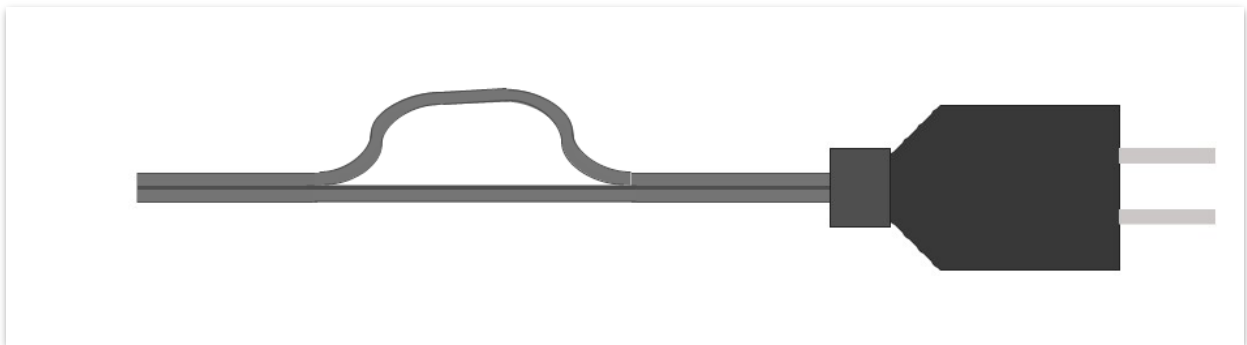
15.2.1 Connecting the Current Sensor

1. Just plug the sensor to your gateway via Ethernet cable.
2. Make sure you place the current clamp correctly as shown below.

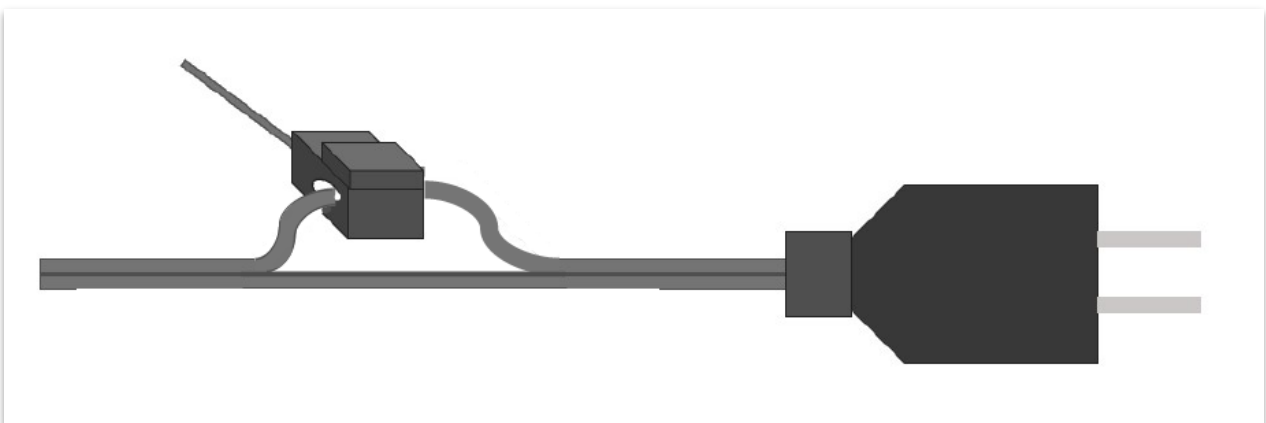
Example Plug going to the wall outlet



Make sure you separate the wire as shown on the image below
You do not have to peel the protective rubber covering the wire but make sure that the two wires are separate.



Clamp the transducer on either of the wires and check if you have reading over the gateway GUI.



15.3 View of AC power failure (PWR-AC-FAIL)

The power failure sensors enable you to get alerts when the main power goes out.



Almost any server room is equipped with UPS systems (batteries) that kick in when the main power supply goes out. However knowing when this occurs is a different thing. While the more expensive UPS systems have some kind of management and alerting system, the most popular ones don't have it.

The power failure sensors from enable you to get alerts when the main power goes out as well as measure the actual voltage.

In combination with our PWR-AC-CUR, you can measure power more accurately.

15.4 Main sensor unit (PWR-BAT-STRING)



Main unit for the battery monitoring system where the battery cell sensors as well as the string current sensor are connected.

15.5 Sensor Units (PWR-BAT-CELL)



Note: for Li-Ion batteries monitor for following toxic gasses: Hydrogen Fluoride (HF), Carbon Monoxide (CO) or Carbon Dioxide (CO₂)

- For lead acid batteries the primary gas to monitor is the Hydrogen gas (H₂). Monitoring up to 100% Lower Explosive Limit (LEL).

The gas detectors can be optionally mounted onto the PWR-BAT-STRING module or can be purchased as separate gas sensors.

You can chain connect up to 15 PWR-BAT-CELL for every PWR-BAT-STRING.

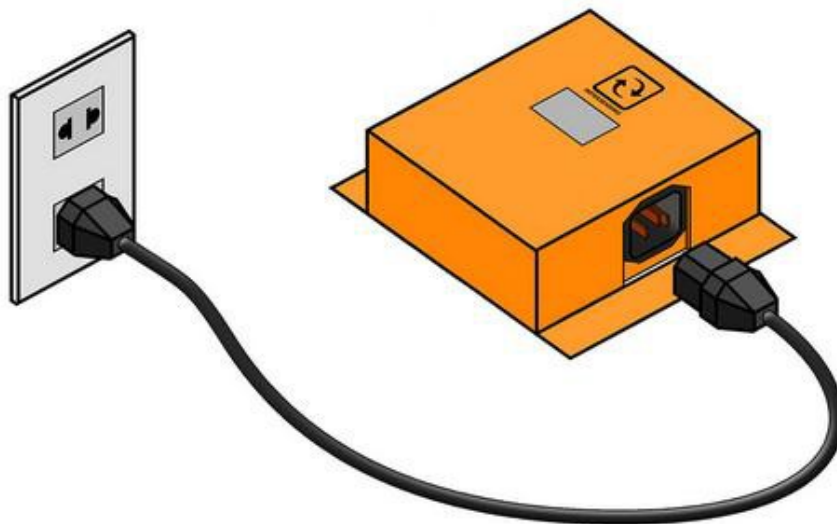
15.6 Power Quality Sensor (PWR-AC-QUAL)



Using industry standards, it will analyze and translate your power quality in simple and actionable information.

Plug and play. Simply connect an IEC C13-C14 cable to the unit and into the power wall outlet you want to monitor. As soon as it is powered, it starts monitoring. It is that simple.

It is designed to monitor single-phase power quality in your critical facilities and edge infrastructure sites.



15.6.1 Initial set up for the power quality sensor using BASE-XX

1. Connect your power quality sensor into your power outlet using an IEC C13-C14 cable, then via Ethernet cable going into your Base Unit.

	Volt	Volt Meter1	196.4 V	<46 OR >250	<44 OR >300	☐	☐	☐	☐	DISABLE	-
	Voltage Status	Voltage Status1	BROWNOUT	-	SET	☐	☐	☐	☐	DISABLE	-
	THD	THD1	1.1 %	>5	>10	☐	☐	☐	☐	DISABLE	-
	Frequency	AC Frequency1	60.58 Hz	<50 OR >60	<40 OR >70	☐	☐	☐	☐	DISABLE	-

2. Access your Base Unit, the above image should be visible from your homepage, now we have to set up the correct reference voltage, to do this we have to go to Settings>Calibrate Sensors

Temp Threshold	0.00	+	0.00
Humidity Threshold	0.00	+	0.00
AC Voltage Type	☒ 220/240	☐ 110/120	-
AC Voltage Offset	?	+	0.00
Sync Internal Temp Sensor with External	☐		
Power Quality	230 Volts / 60 Hz		

Update Reset

3. Under the Calibration option, just scroll down until you see the option for Power Quality, then apply the correct Voltage reference. The power quality sensor would also sync its time with Base Unit upon updating the calibration option.

Although you can fully customize the alerting parameters, we recommend the table below as your guide.

State	Description	Actual V	Voltage Threshold	Duration
OK		Within +/- 6%	+/- 6% from reference	
Warning	SAG	Low voltage	- 6% from reference Voltage	0 to 1min
Down	BROWNOUT	Low voltage	- 6% from reference Voltage	> 1min
Warning	SWELL	High voltage	+6% from reference Voltage	0 to 1min
Down	LONG SWELL	High voltage	+6% from reference Voltage	> 1min
Down	INTERRUPT ION	Zero Voltage	Voltage is zero	< 5 sec
Down	FAILURE	Zero Voltage	Voltage is zero	>= 5 sec
Down	TRANCIENT	Sudden Spike	>30%	Few milliseconds (lightning, etc.)

15.6.2 Initial set up for the power quality sensor using SD card .ini file

1. Connect your power quality sensor into the power outlet using an IEC C13-C14 cable, then connect it to the PC using the USB Type-B to USB cable.
2. Access then SD Card using your PC's file explorer, then open the .ini file. The .ini file contains the parameters that are used by the PWR-AC-QUAL.
3. In the .ini text file, change the following:

Parameter	Value
"VOLT_DEFAULT"	230
"F_DEFAULT"	60
"SET_TIME" After you have enabled this option, set the YEAR, MONTH, DAY, HOUR, MIN, and SEC according to the current timestamp.	YES

Sample file:

```
"RELEASE"      3.00
"DATE" Sep_25_2019 "VOLT_DEFAULT"      230
"F_DEFAULT"    60
"CALIBRATED" YES "VOLT_OFFSET"        1
"VOLT_CODE100" 455300
"VOLT_CODE200" 912400 "SET_TIME"      YES

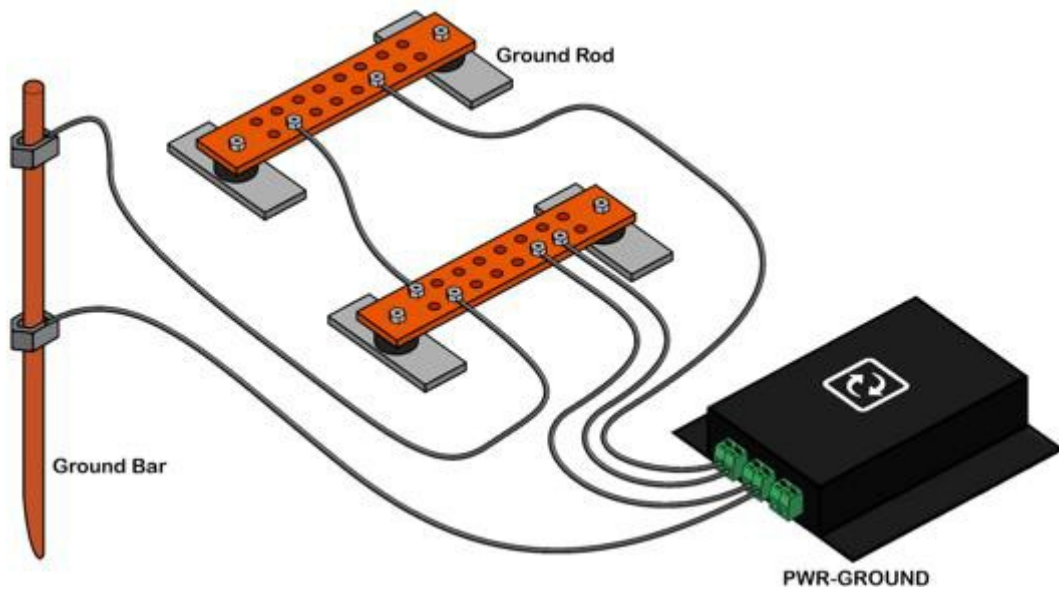
    "YEAR"      2022
    "MONTH"     02
    "DAY"       03
    "HOUR"      17
    "MIN"       24
    "SEC"       00
}
```

4. After the parameters are changed, save the file.

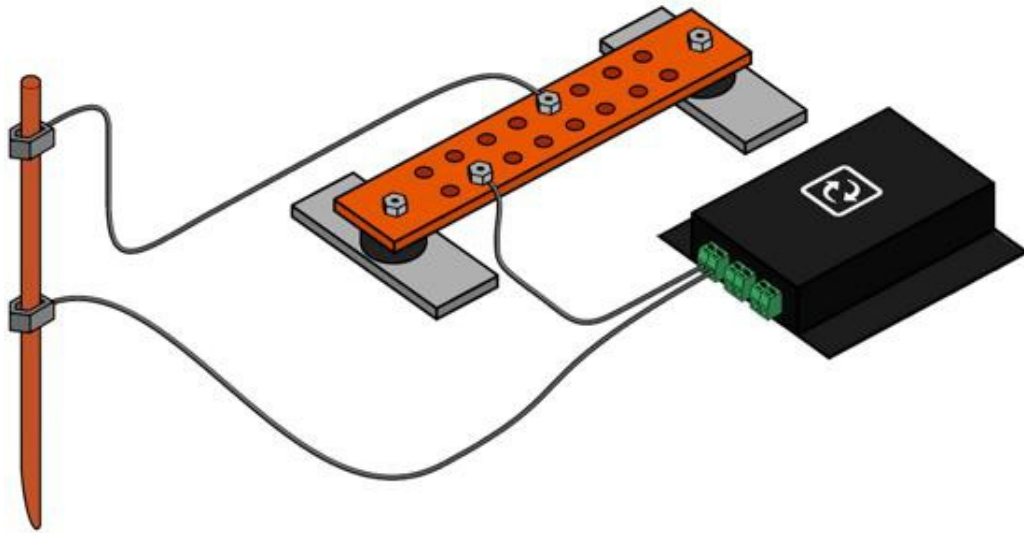
15.7 Ground (Earthing) Monitoring Sensor (PWR-GROUND)



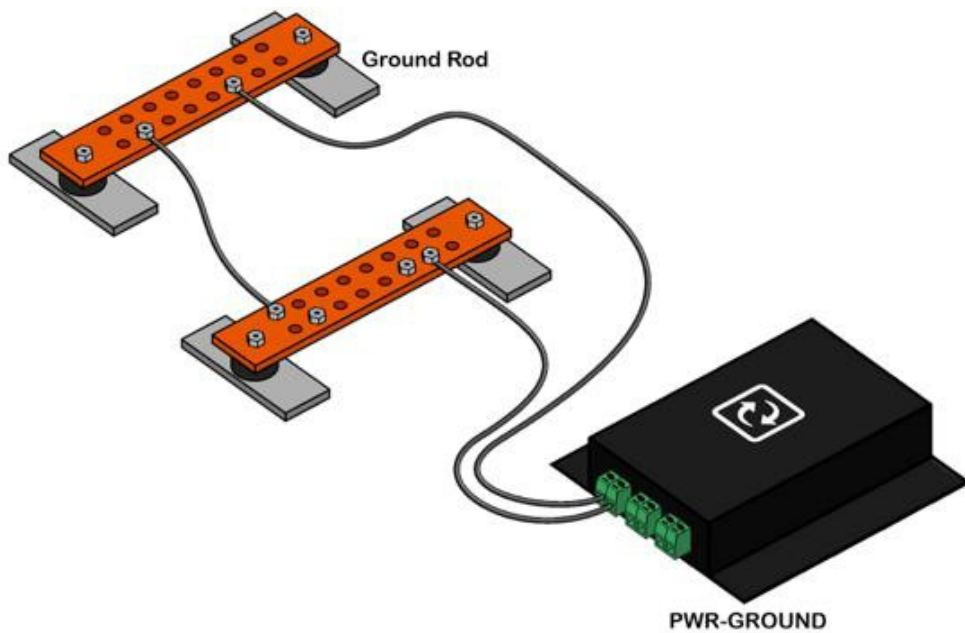
The InfraSensing Grounding Monitoring system connects to your facilities or sites electrical ground system. It checks non-stop the grounding's resistance. This allows you to get early warning on your grounding system.



The above image shows our grounding sensor which checks the ground bar connected to the ground rod as well as the connectivity of 2 ground rods.



Ground bar connected to your Ground Rod



Ground rod connected to another ground rod

The above applications show that our sensor would continuously check if there are changes in your grounding system such as:

- accidental disconnected grounding systems
- corrosion of copper ground bars due to environmental conditions
- copper ground theft

Use solid/stranded wires with sizes 26-16 AWG to connect

15.8 IP68 Ultrasonic Fuel Level Sensor (PWR-FUEL)

15.8.1 Features

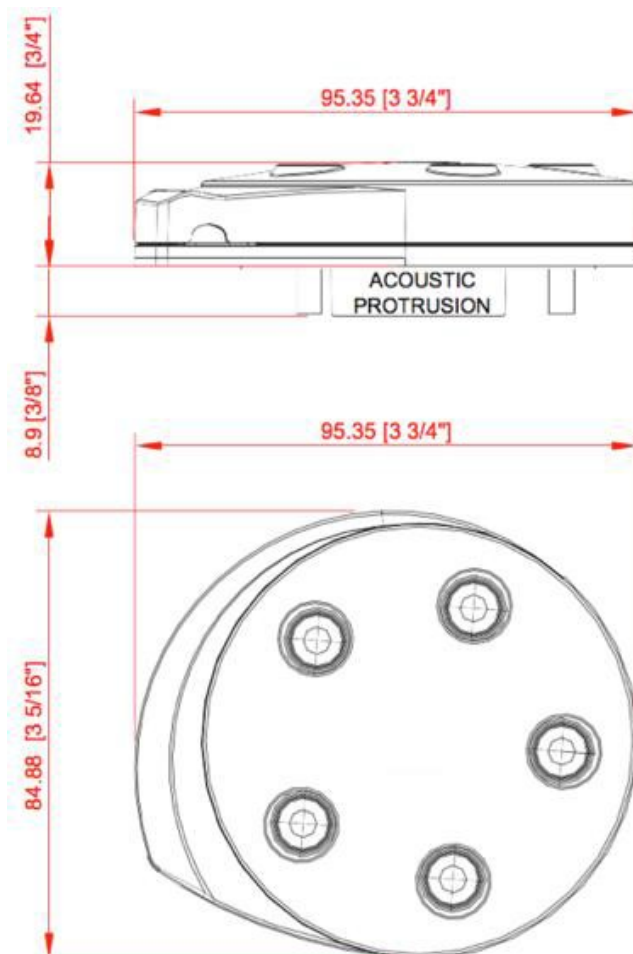
- Plug & Play
- Contactless (ultrasonic) fuel level measurement
- Operating distance of 0mm to 2000mm maximum
- Measures fuel level inside tanks with depths of up to 2m (6.5ft) with wall thickness of up to 6mm.
- Supports metal and plastic tanks
- Extremely low profile only 20mm high once mounted
- IP68 rates for outdoor use
- Calibrated in factory based on specs of your tank
- In operating temperatures of 4°C to 65°C (39F to 148F)
- ISO 884 6ignition protected
- Fire Resistance tested to ABYC, US Coast guard and ISO 10088Industry standard SAE-5 stud mounting pattern with gasket seal and washers. Resistant to Petrol and Diesel



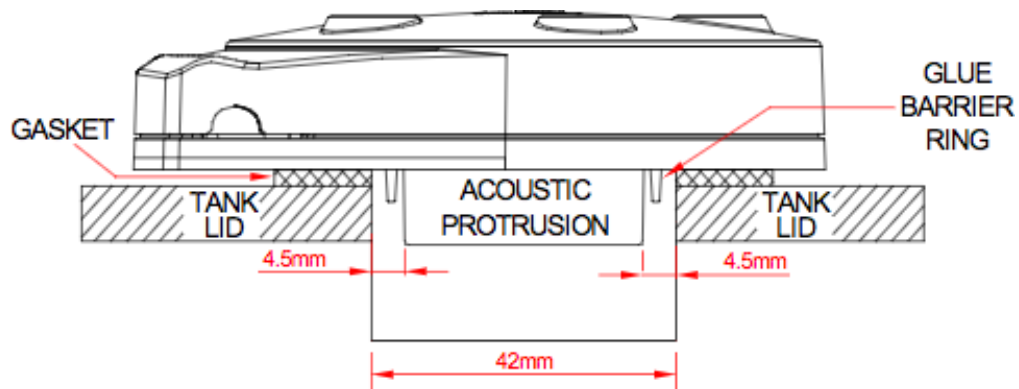
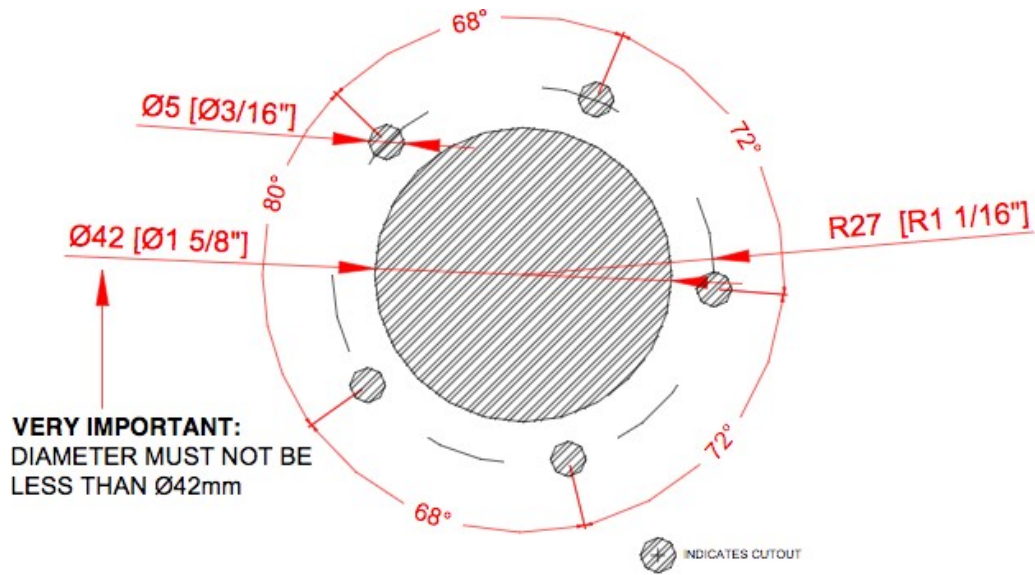
15.8.2 Maximum Tank Depths

- Operating distance of 0mm to 1100mm for Petrol tanks
- Operating distance of 0mm to 2000mm for Diesel tanks
- Operating distance of 0mm to 1500mm at 55°C

15.8.3 Dimensions



15.8.4 Mounting and Installation



IMPORTANT
SIDE WALLS OF ACOUSTIC PROTRUSION MUST BE NO CLOSER THAN 4.5mm TO THE TANK SIDES OF THE CUTOUT HOLE

- The acoustic protrusion should be positioned in the tank aperture in the center of the hole. The protrusion should ideally be protruding into the tank and not be recessed in the hole. See drawing above.
- For tightening screws ensure base and washers are sitting flat. Tighten screw until screw head makes contact with the washer, and then tighten another 2 full turns.

Maximum torque for the mounting screws is 0.5 Newton meter.

Note: Drawing is not to scale. Please use the tank gasket as a template and make sure the tank hole is 42mm .

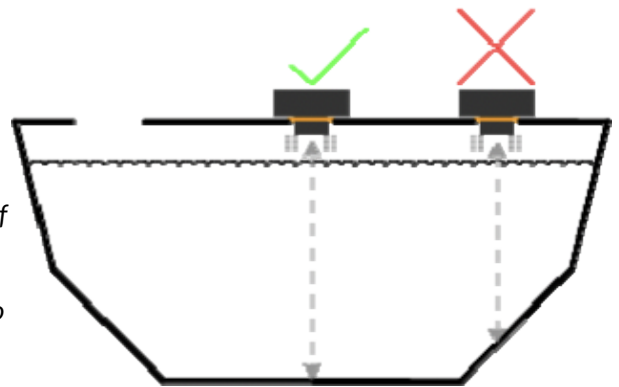
15.8.5 Tips and example Installations

- The sensor must not be mounted closer than 150mm from the center to the sides of the tank, baffles or other intrusions.
- Only use on tanks greater than 200mm in depth.
- Sensor must be mounted parallel to the surface of the liquid.
- Make sure that sensor protrusion is NOT in contact with any object including Sealant when mounted.
- Use gasket and fittings as provided.
- Mount above deepest point of the tank.

Case 1

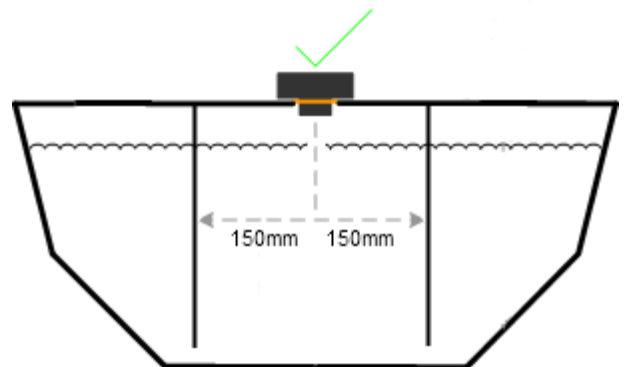
The sensor must be mounted at the deepest tank point!

It is recommended the sensor is mounted in the middle of the tank, this is particularly important on low or no baffled tanks that are mounted in moving vehicles or vessels. This allows the sensor to average waves of fuel to the correct level when the depth is varying due to wave slop.



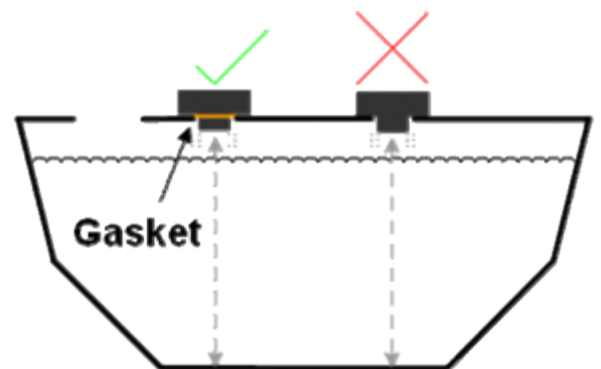
Case 2

The sensor must be mounted at least 150mm from a vertical tank baffle, tank walls and piping.



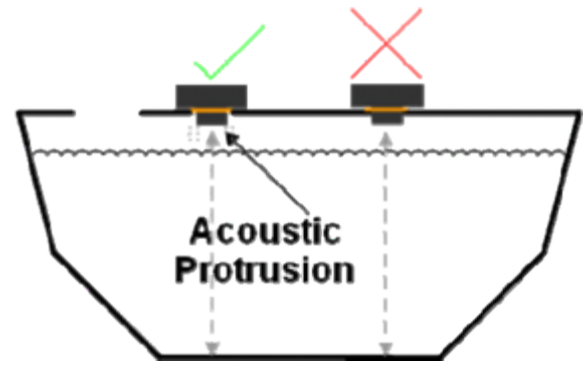
Case 3

Use 5 washers provided, washers must be placed under screw heads to prevent rubber lid damage.



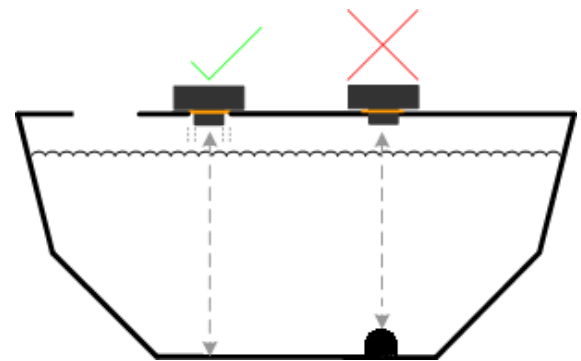
Case 4

Acoustic protrusion must not touch the tank frame.



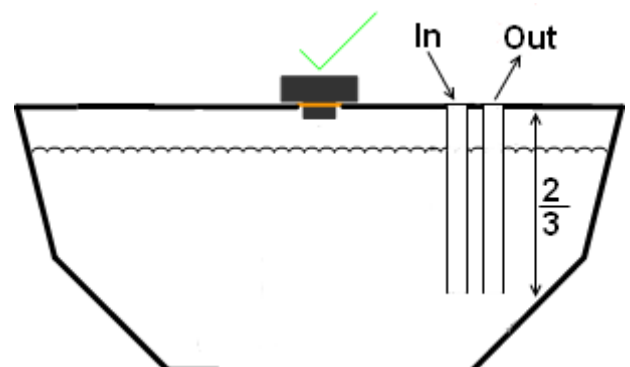
Case 5

The sensor must be mounted so it can see the bottom of the tank if the fuel is to be measured to the bottom.



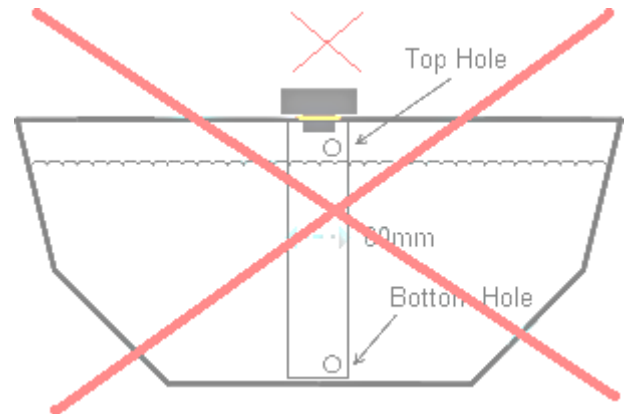
Case 6

Inlet and Outlet piping must go in at least 2/3rds of the way in to the tank to stop turbulence when filling.

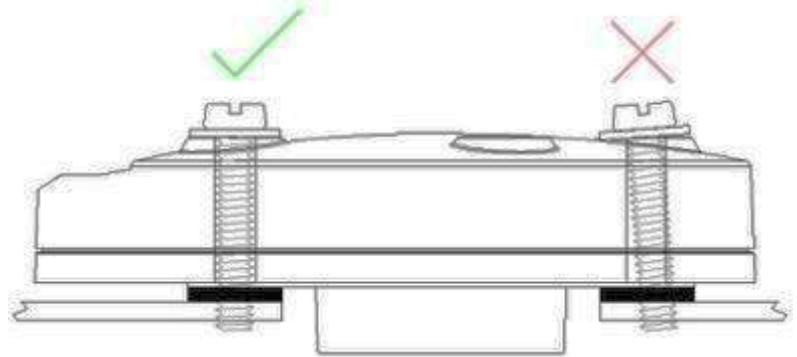


Case 7

Do not fit the sensor with a tube.

**Case 8**

Ensure bolts and mounting holes are aligned properly to keep plastic body isolated acoustically from tank.
Do not over tighten the screws.



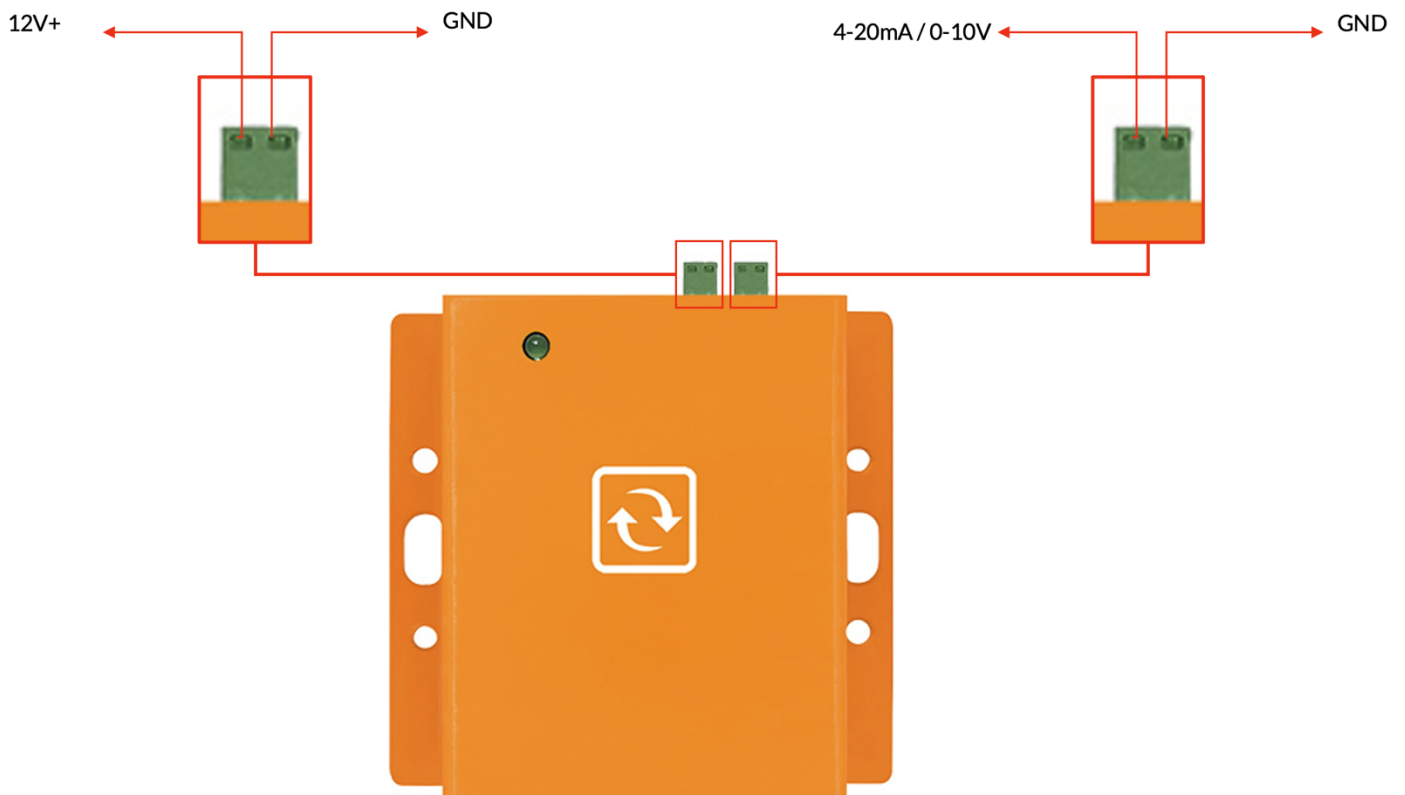
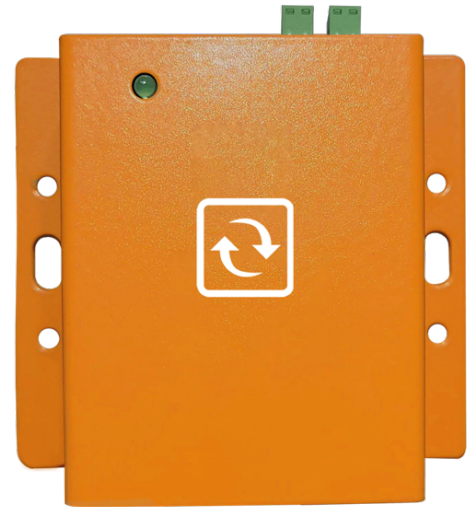
16 Industrial Sensor

16.1 Industrial 0-10V (IND-0-10V)

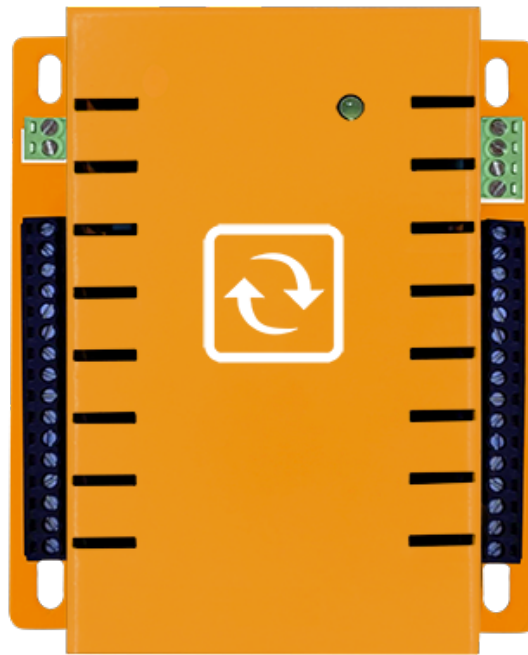
Designed to read any 3rd party sensors that has output of 0-10V.
Can power up sensors with auxiliary 12V DC supply.

16.2 Industrial 4-20mA (IND-4-20mA)

Designed to read any 3rd party sensors that has output of 4-20mA.
Can power up sensors with auxiliary 12V DC supply.



16.3 The IO Sensor Probe – 16 Dry Contacts IN & 4 OUT (IND-IO)



16.3.1 General Description

The IO sensor probe is a 16-zone expander for the Base Unit that adds up to 16 dry contacts for sensor alarm detection and indication. It has 4 output lines that can drive sirens and strobe lights. It is also capable of giving a 12-volt power supply and a maximum of 700 mA current capacity, enough to power several sensors and output devices.

Note: Only one IO Sensor Probe per Base Unit with no other sensors connected, It needs to be directly plugged in one of the ports (does not work with expansion hubs)

16.3.2 Applications

- SNMP interface sensor trigger and status
- SNMP traps sent when a change of state occurred
- SNMP polling for zone/sensor status
- SNMP set capability for OUTPUT purposes
- 12-VDC power source for sensors

16.3.3 Terminal Description

TERMINAL BLOCKS

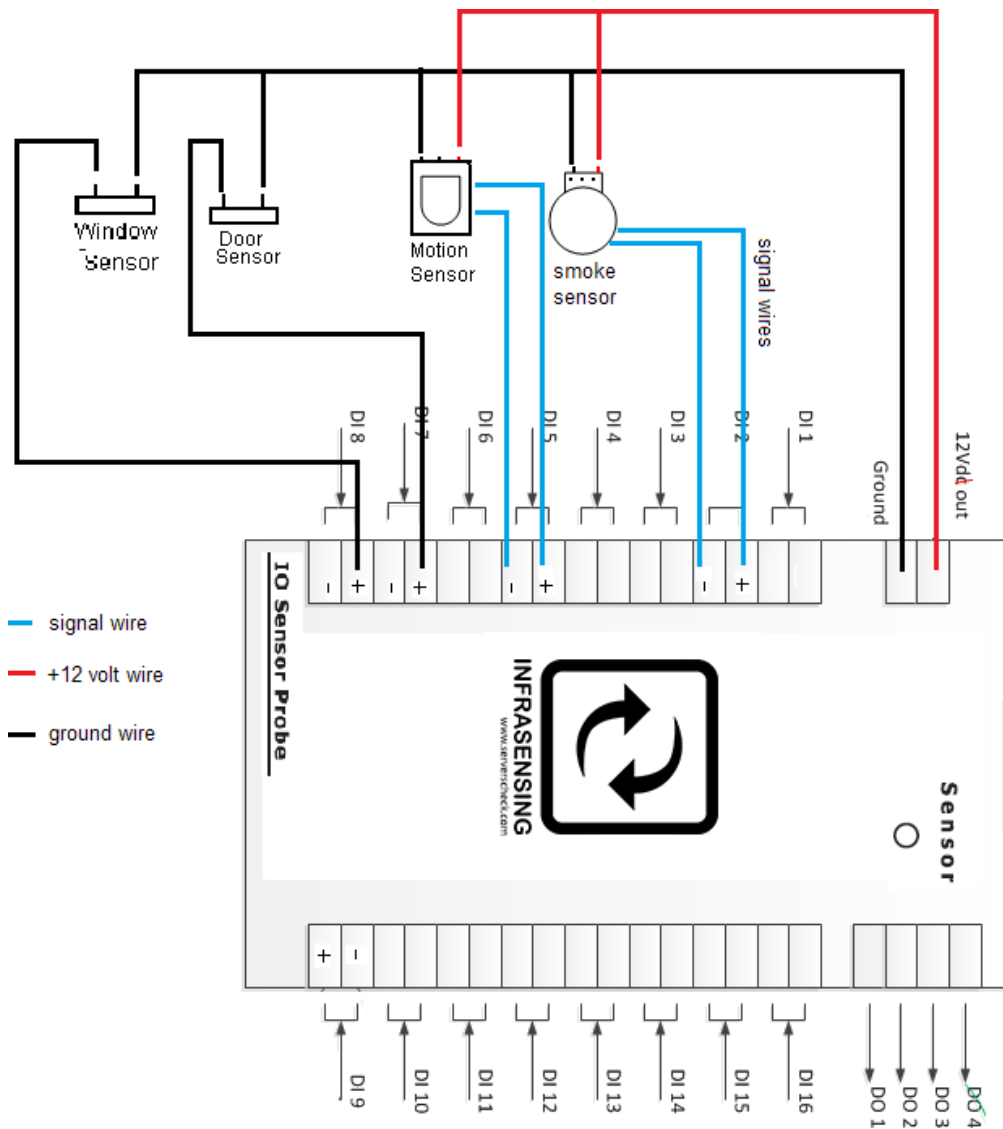
DI1 to DI16 : 16 digital inputs DO1 to DO4 : 4 digital outputs

+12V : 12 VDC supply

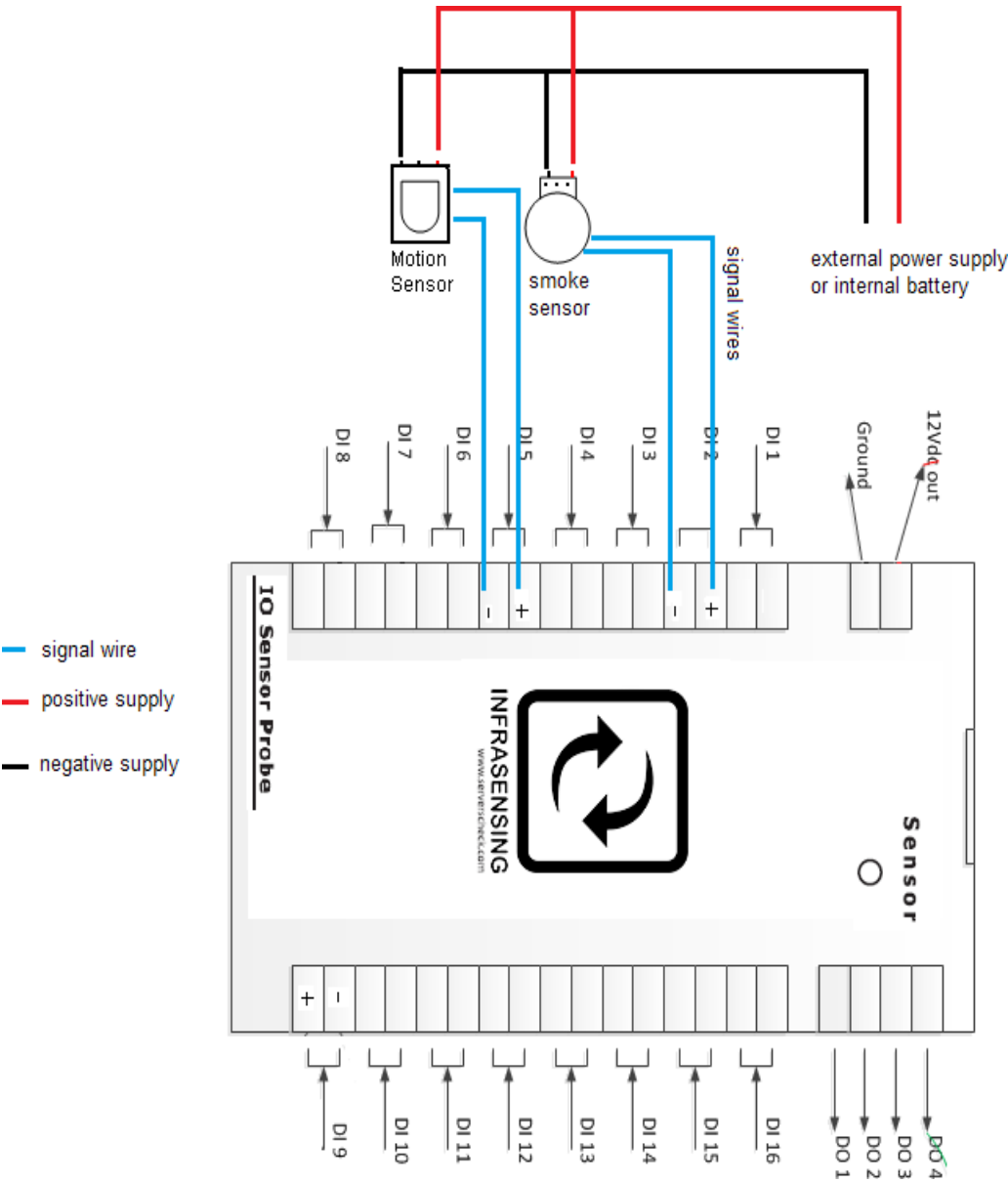
GND : supply ground

16.3.4 Basic wiring diagram

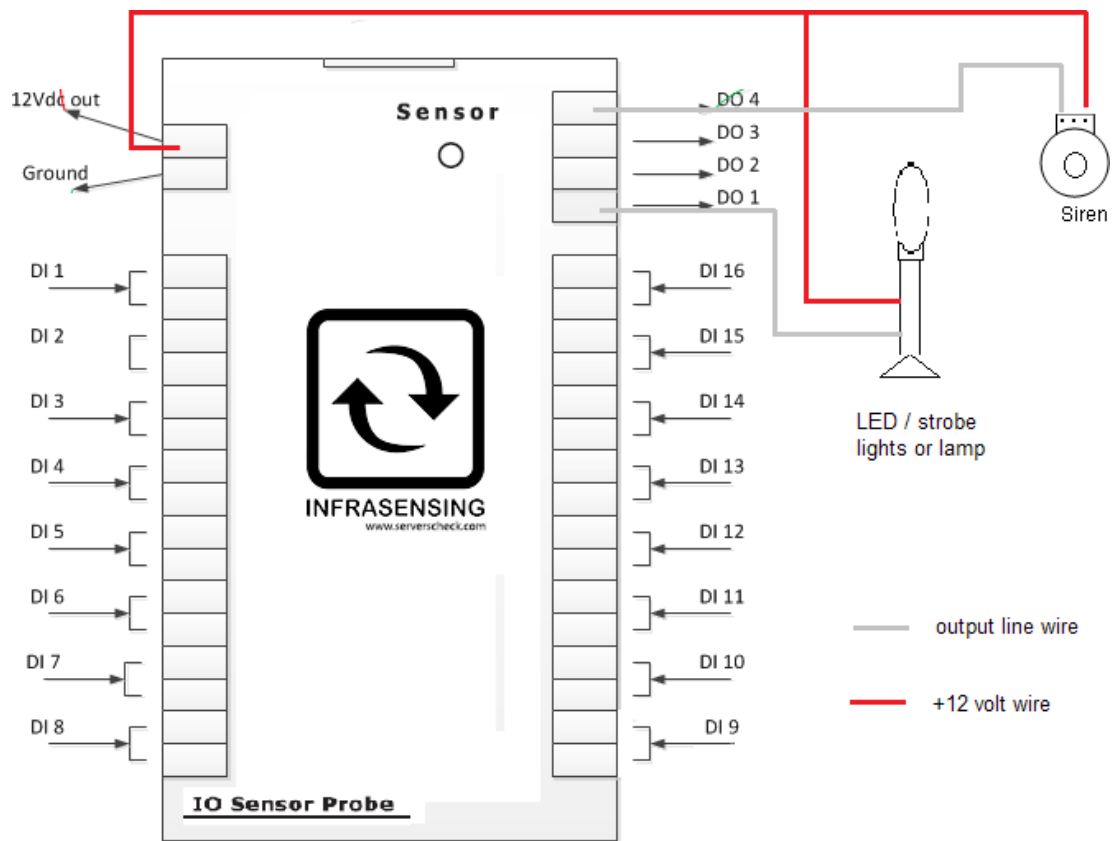
Inputs: if sensors are getting their power supply from the IO sensor probe



Inputs: if sensors are getting their power supply from an external source or internal battery



Outputs: to drive a siren, lamp/strobe or any output device



16.3.5 Base Unit IO sensor probe interface

Status	Type	Name	Value	Warning Range	Down Range
	Temperature	Int. Temp1	29.42 °C	< 18 > 37	< 15 > 41
	Input 1	UndefinedIO 1	OK	alert if contact state is not Open	for more than 500
	Input 2	UndefinedIO 2	OK	alert if contact state is not Open	for more than 500

Control Outputs

Name	Current Value	Default State	Control Output
Output1	OFF	OFF	CYCLE
Output2	OFF	OFF	CYCLE
Output3	OFF	OFF	CYCLE
Output4	OFF	OFF	CYCLE

Name

- Is used to assign a name to a zone or sensor (i.e. motion1, smoke1, door1)
- Due to memory limitations, make sure that the maximum number of characters on this field doesn't exceed 31.

Value

- Shows the status of a zone. OK = normal condition, **Trig** = a zone/sensor has been triggered

Time (milliseconds)

- A time period that can be set which serves as a "wait period" before the IO sensor probe considers a change of state of a zone/sensor as an alert or a trigger

Normal State

- This will set the "logic" of the Input on how to define a trigger /change of state coming from the sensors
- It can be set as "open" for normally open (NO) logic or "closed" for normally closed (NC) logic.

ALWAYS CLICK "UPDATE" AFTER EVERY CHANGE IN VALUES/PARAMETERS for changes to take effect

OUTPUT1 TO OUTPUT4

- The default state can be set to either ON or OFF and is used in conjunction with triggers (ex. siren or strobe /lamp)
- CYCLE button is used to

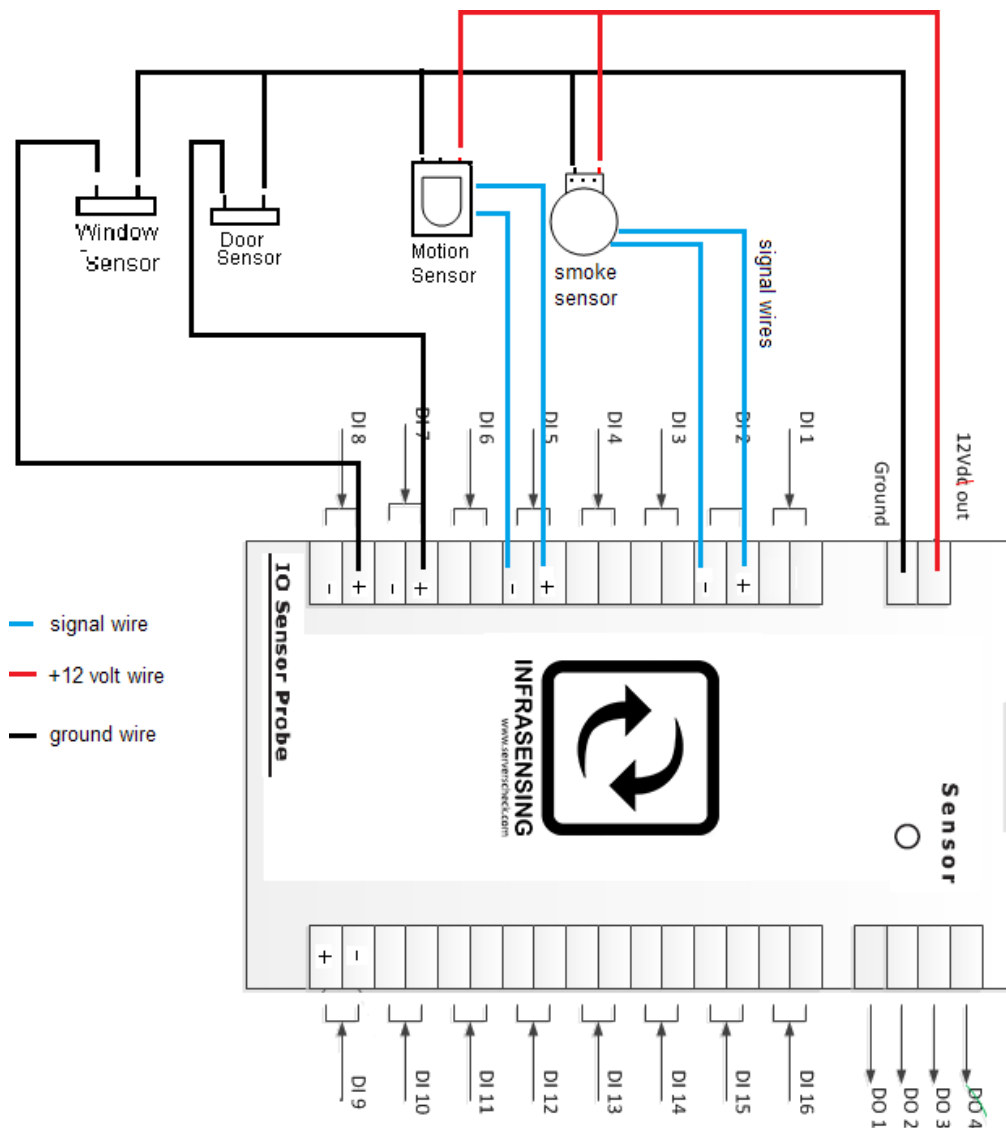
16.3.6 Wiring configuration and settings (anti tampering)

The IO sensor probe does not have the ability to give out specifically a “tamper” alert. But it can be wired and set to give out a “normal” alert.

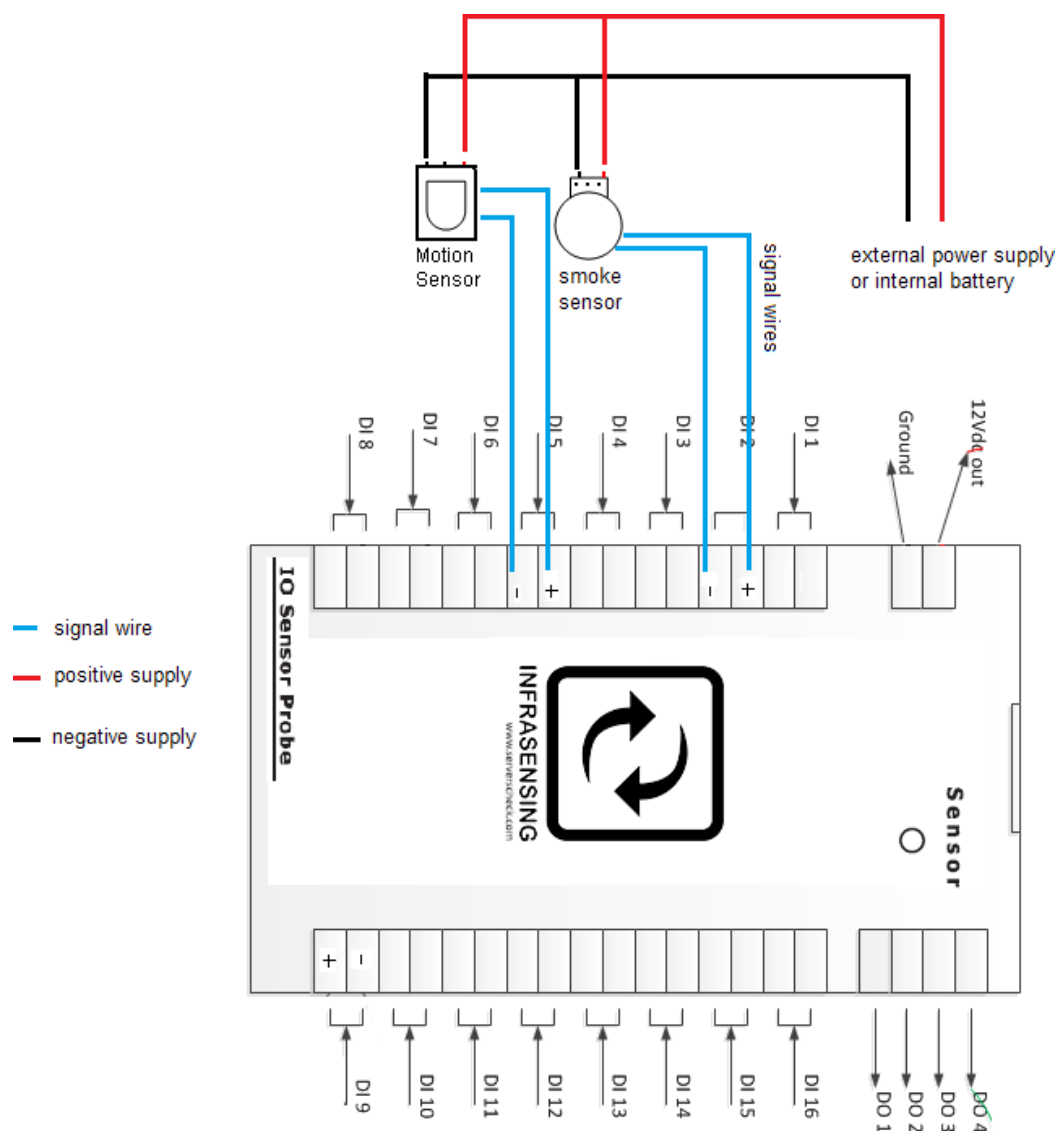
If ever a power supply wire or a signal wire was cut off in which case the monitoring team must still attend to.

Basic wiring diagram for Inputs still applies

Inputs: if sensors are getting their power supply from the IO sensor probe

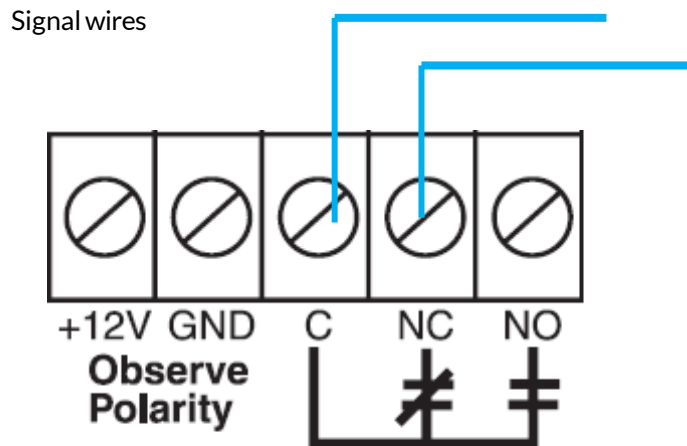


Inputs: if sensors are getting their power supply from an external source or internal battery



A typical sensor (motion, smoke, CO, etc.) has dry contacts as its signal output to a control panel (usually located inside of the sensor, at the back or already exposed via 3 wires and a terminal connector)

Connect the signal wires from the IO sensor probe (can be interchanged) to NC and C terminals of the sensor



DRY CONTACT TERMINALS

NO: normally open (open circuit if not triggered / short circuit when triggered)

NC: normally closed (short circuit if not triggered / open circuit when triggered)

C : common (common terminal)

Set the all Normal State to “**Closed**” (setting the trigger logic to normally closed)

IMPORTANT NOTICE WHEN MONITORING VIA SNMP

When monitoring the IO Sensor via SNMP then one should use the SNMP traps feature instead of using the SNMP Get requests. Through SNMP GET one only receives the status of the contact at the time when the request is made. With the SNMP Traps it will trigger an alert as soon as the condition is met.

16.3.7 Output triggering

The output triggering can toggle between automatic / assigned or manual/direct using the corresponding buttons on the sensor page. This requires firmware 6.00 or higher for the new Logic architecture.

Control Outputs

Name	Current Value	Default State	Control Output
Output1	OFF	OFF	CYCLE
Output2	OFF	OFF	CYCLE
Output3	OFF	OFF	CYCLE
Output4	OFF	OFF	CYCLE

Automatic/Assigned Output on Sensor Thresholds

The output triggering (digital and relay) can be set using the assigned threshold on a particular sensor. Simply assign an output from the drop down menu and its state you want it to do. Several sensors can share and be assigned to a particular output.

Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To
	Temperature	Int. Temp1	29.79 °C	< 18 > 37	< 15 > 41	☐	☐	☐	☐	Output1 ON
	Input 1	UndefinedIO 1	OK	alert if contact state is not Open	for more than 500 ms	☐	☐	☐	☐	Output2 OFF
	Input 2	UndefinedIO 2	OK	alert if contact state is not Open	for more than 500 ms	☐	☐	☐	☐	Output3 CYCLE

****so to say after meeting a threshold, it can direct a device to either turn on or off****

17 Security Sensors

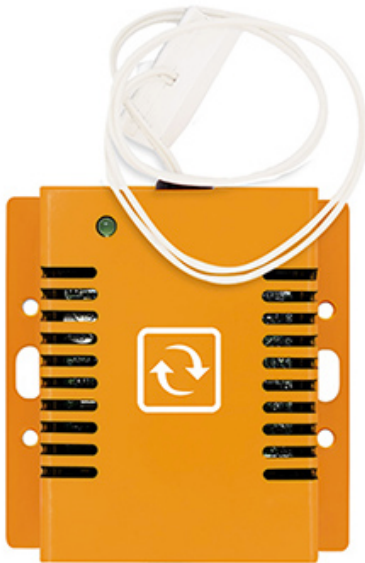
InfraSensing's security solution allows detection of doors, motion, and smoke. Underneath all of these security probes is a simple logic that's adjustable to be close or open. Upon setting a given value, the sensor will instantly be triggered once the opposite is detected which will end up sending you an alert on the event that currently occurred. Being adjustable however, means there's room for changes whenever the situation requires you. This allows for maximum flexibility of what defines an alert.

In this figure, the actual probe that's attached is the door sensor with the logic defaulting to *CLOSE*. Upon opening, we see how it is triggered and thus will eventually send alerts depending on the alerting options chosen.

It is important to note that all security probes have the same web interface so it is advisable to attach one at a time and immediately rename it according to your naming conventions.



17.1 Door Sensor (SEC-DOOR)



The door contact sensor can be mounted inside racks, cabinets, or server room doors. It triggers an alert when the door is opened.

17.2 Motion Sensor (SEC-MOTION)



Industrial grade motion sensor feature digital signal analysis ensures consistent detection across its coverage pattern. With digital temperature compensation, it enhance catch performance at critical temperature levels, providing accurate detection of human IR energy over a wide temperature range.

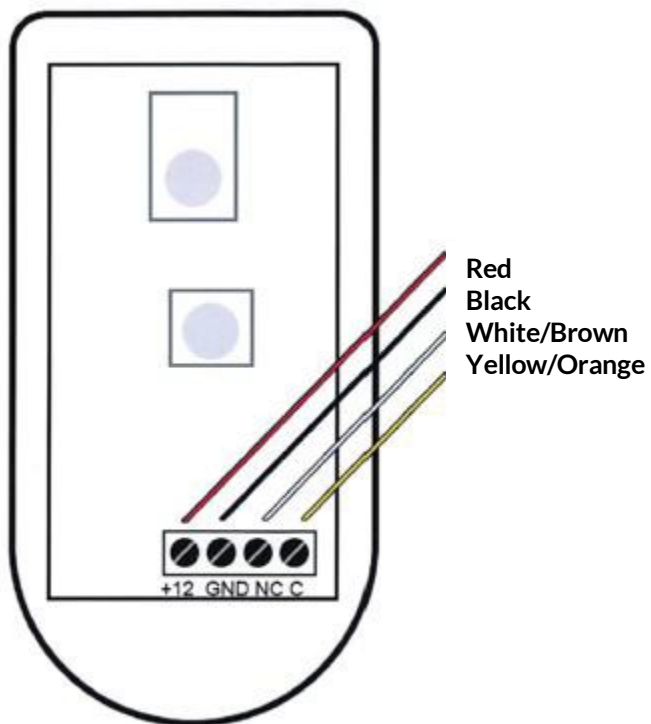
17.2.1 Installation guide for motion sensor



As shown on the image, to remove the cover the lock should be pressed.



Once opened you should see 4 screws where you can connect the wires.



Red Wire: Connect to the Positive terminal (+12) of the Motion Sensor.

Black Wire: Connect to the Negative terminal or GND of the Motion Sensor.

Yellow or Orange Wire: Connect to the Common terminal (C) of the Motion Sensor.

White or Brown Wire: Connect to the Normally Closed (NC) Terminal of the Motion Sensor.

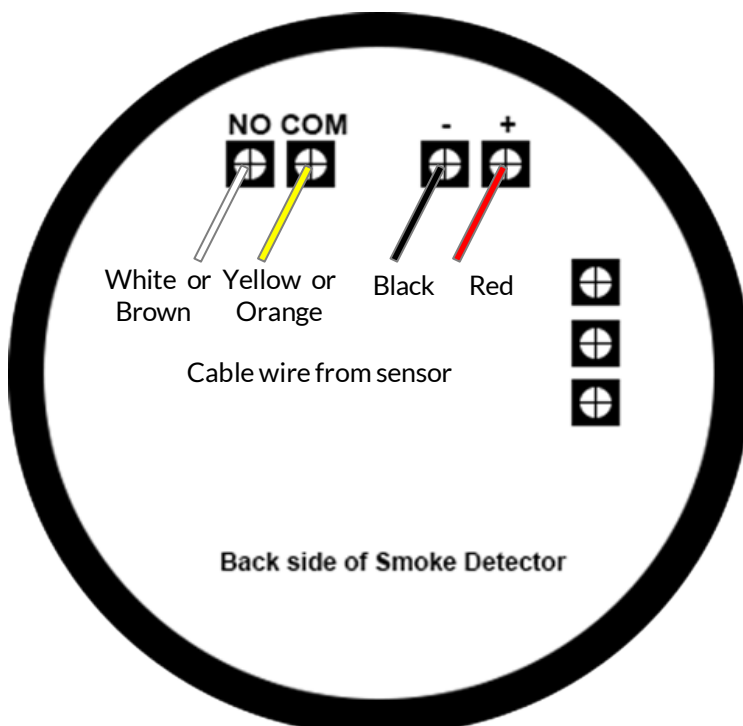
17.3 Smoke Sensor (SEC-SMOKE)



This sensor is a photoelectric smoke sensor that is designed to monitor smoke within facilities, complementing but not replacing mandatory building fire detection systems. It incorporates self-diagnostics and meets NFPA 72 Sensitivity testing requirements without external meters. Equipped with in-built dust compensation, sounder, and a patented CleanMe® feature, it ensures easy maintenance with a replaceable optical chamber. This sensor provides superior protection against false alarms from dust, RF, and ambient light through built-in drift compensation, enhancing its reliability.

17.3.1 Installation guide for Security Smoke Sensor

Wiring



There are 4 wires from the Security Sensor

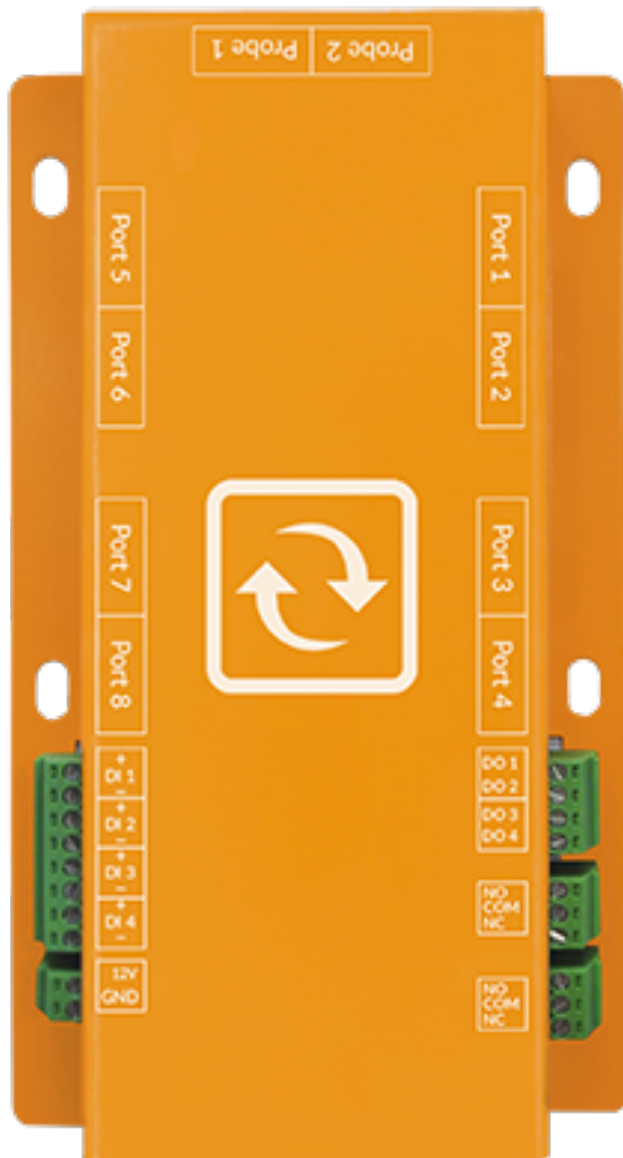
1. Red Wire: Connect to the Positive terminal of the Smoke Detector.
2. Black Wire: Connect to the Negative terminal of the Smoke Detector.
3. Yellow or Orange Wire: Connect to the Common terminal of the Smoke Detector.
4. White or Brown Wire: Connect to the Normally Open Terminal of the Smoke Detector.

How to turn off alarm after smoke detection.

Disconnect the RJ45 cable connecting the smoke sensor from the Base Unit or SensorHub

18 Sensor Hub (EXP-8HUB)

The sensor hub is a port expander attachment / peripheral for the Base Unit that allows it to accommodate up to 8 sensor probes. It has 4 input dry contacts for sensor alarm detection and indication, 4 output lines that can drive sirens and strobe lights, 2 relay outputs for contact control requirements. It is also capable of giving a 9 to 12-volt power supply and a maximum of 500 mA current capacity, enough to power several sensors and output devices.



18.1 Probe Restrictions

- must not be connected with IO sensor probe
- must not be connected with wireless probe
- must not be connected with QoS probe
- Thermal camera and other sensors indicated should be connected to High-speed ports

Ports 1 to 4: High speed ports

Ports 5 to 8: Regular ports



18.2 Connecting the SensorHub to the Base Unit



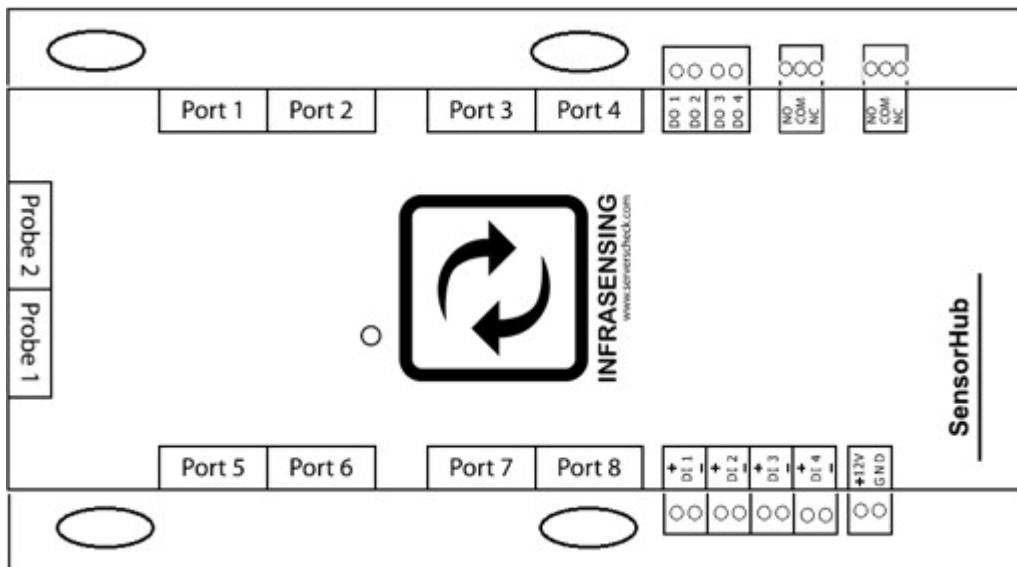
The sensor hub connects through regular RJ45 cables to the Base Unit. The connection from the base unit going to the SensorHub should not exceed 1 meter / 3.3 ft.

Plug the 2 RJ45 cables in the 2 ports of the Base Unit and the other end going to the 2 ports of the SensorHub.

Do note that port label can be disregarded as long as 2 cables are connected, any combination would work, please refer to the image below.



18.3 Terminal Connections

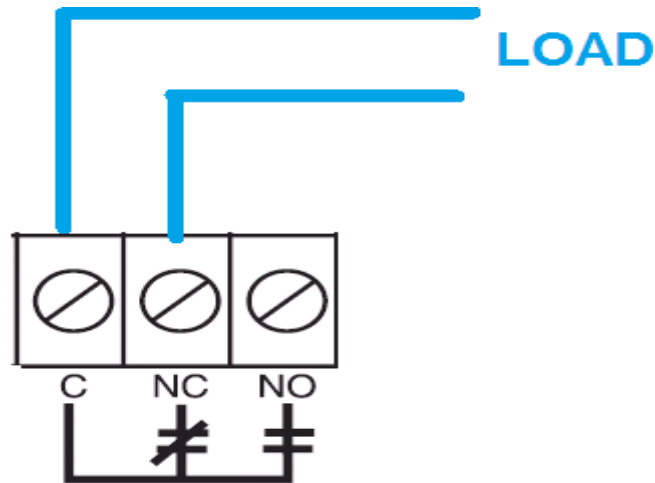


PROBE 1 AND PROBE 2 : connect to Base Unit using two RJ 45 cables
PORT 1 TO PORT 8 : connect sensor probes

DI 1 to DI 4 : connect to 4 dry contact inputs
DO 1 to DO4 : connect to 4 digital outputs
NO, COM and NC : relay outputs

18.4 Basic Wiring

INPUTS (dry contact)	: same wiring diagram as the IO sensor probe for inputs
OUTPUTS (digital)	: same wiring diagram as the IO sensor probe for outputs
OUTPUTS (relay)	: connection to a load will depend on the wiring convention

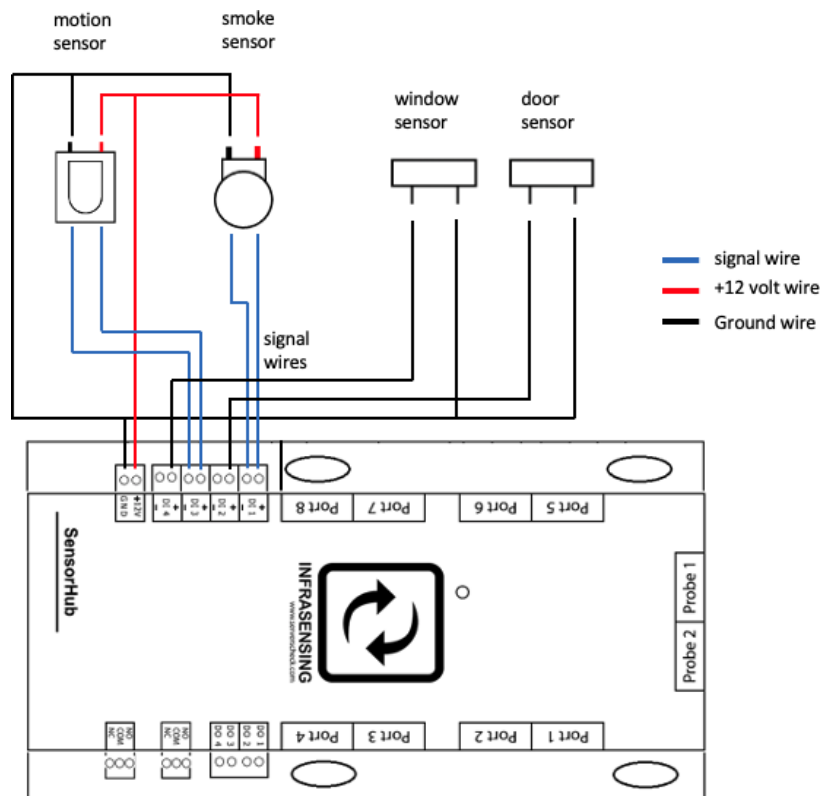


relay terminals

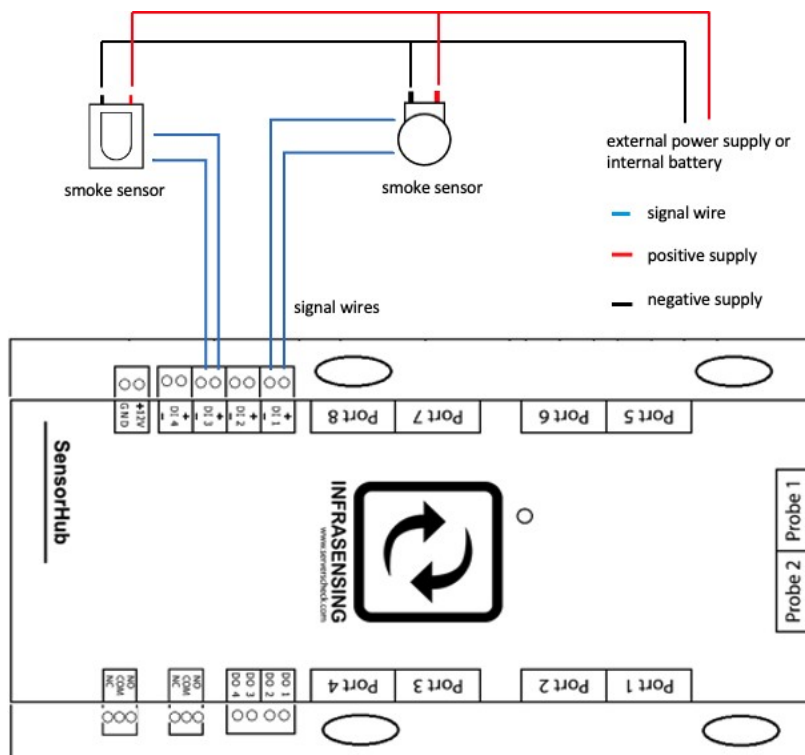
NO :	normally open(always open contact/not connected)
NC :	normally closed(always shorted contact/connected)
C :	common(common terminal)

18.5 Basic wiring diagram

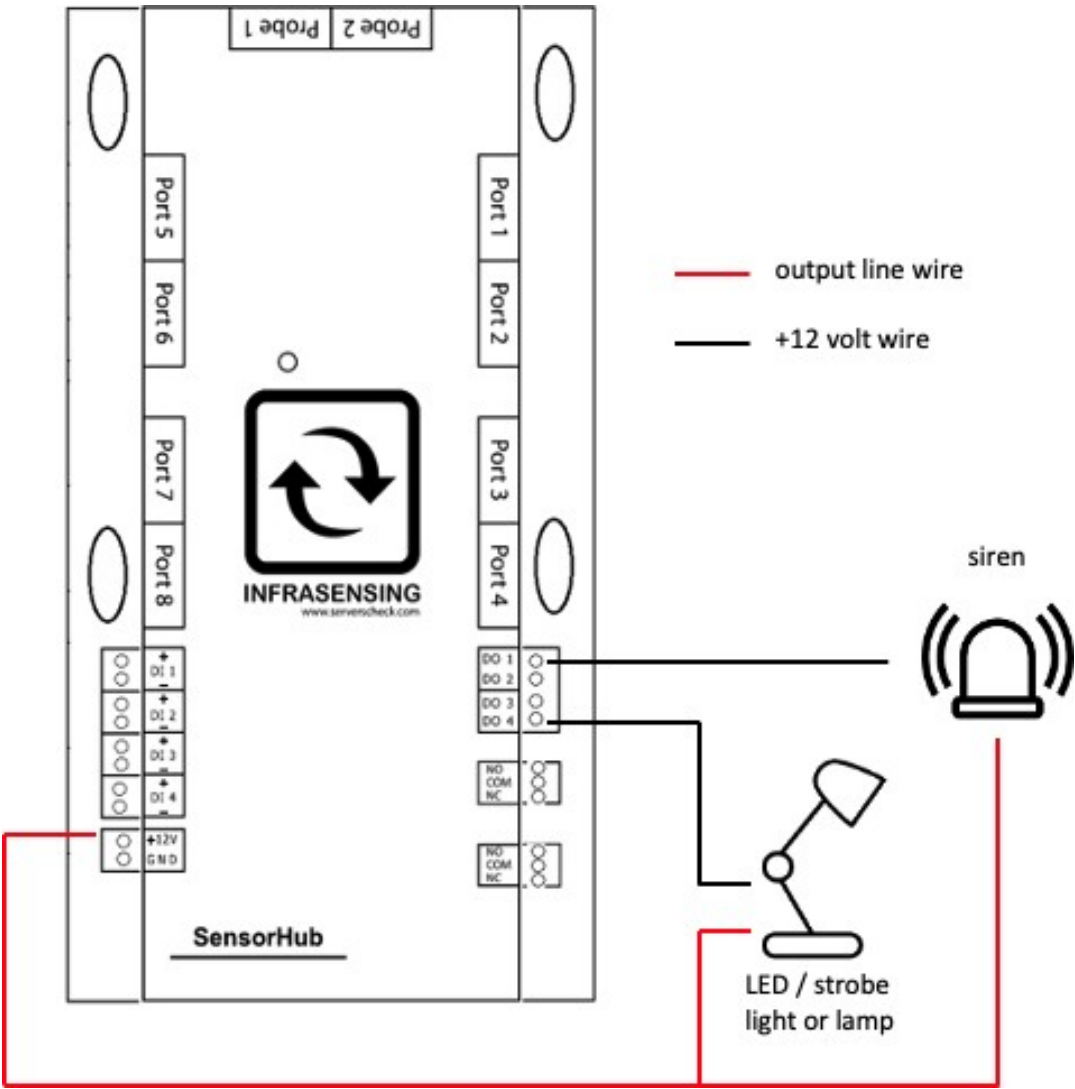
INPUTS: If sensors are getting their supply from the EXP-8HUB



INPUTS: If sensors are getting their power supply from an external source or internal battery



OUTPUTS: To drive a siren, lamp/strobe or any output device



18.6 SensorHub web interface

When you access the Base Unit with the SensorHub Connected you can see the images below.

Expansion of probes along with Inputs along with a new option for outputs.

Sensors

[Full](#)

Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To	
	Temperature	Int. Temp1	31 °C	<18 OR >37	<18 OR >41	☐	☐	☐	☐	DISABLE	+
	Temperature	Ext. Temp1	26.55 °C	<18 OR >25	<18 OR >29	☐	☐	☐	☐	DISABLE	+
	Security	Security1	trip	Sensor Triggered		☐	☐	☐	☐	DISABLE	+
	Temperature	Ext. Temp1	23.53 °C	<18 OR >25	<18 OR >29	☐	☐	☐	☐	DISABLE	+
	Temperature	Ext. Temp2	26.55 °C	<18 OR >25	<18 OR >29	☐	☐	☐	☐	DISABLE	+
	Shock	Shock1	6.97 G	<0.75 OR >1.25	<0.5 OR >1.5	☐	☐	☐	☐	DISABLE	+
	Input 1	Undefined0 1	OK	Close	for more than 500ms	☐	☐	☐	☐	DISABLE	+
	Input 2	Undefined0 2	OK	Close	for more than 500ms	☐	☐	☐	☐	DISABLE	+
	Input 3	Undefined0 3	OK	Close	for more than 500ms	☐	☐	☐	☐	DISABLE	+
	Input 4	Undefined0 4	OK	Close	for more than 500ms	☐	☐	☐	☐	DISABLE	+

Outputs

Control Outputs

[Full](#)

Name	Current Value	Default State	Control Output
Output1	OFF	OFF	CYCLE
Output2	OFF	OFF	CYCLE
Output3	OFF	OFF	CYCLE
Output4	OFF	OFF	CYCLE
Relay1	OFF	OFF	CYCLE
Relay2	OFF	OFF	CYCLE

We will discuss triggering outputs in the in section 19.1.

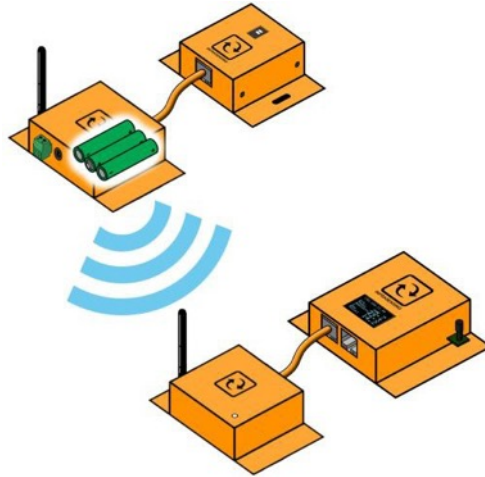
19 LoRa Wireless Hub and Node

By default our InfraSensing sensors are connected with an RJ45 cable to the base unit, But with the Wireless hub (EXP-LWHUB) and Node (NODE-LW-1P), any sensor can be connected wirelessly.

It works when we connect our wireless hub to our base unit (BASE-XX) than any of our sensor to one of the nodes, The node then transmits sensor data over a wireless communication protocol to the Wireless Hub.

The wireless protocol used is called LoRa, a long range and low power communication protocol in the free spectrum.

What you need:



EXP-LWHUB



NODE-LW-1P



BASE-XX



Ethernet Cable

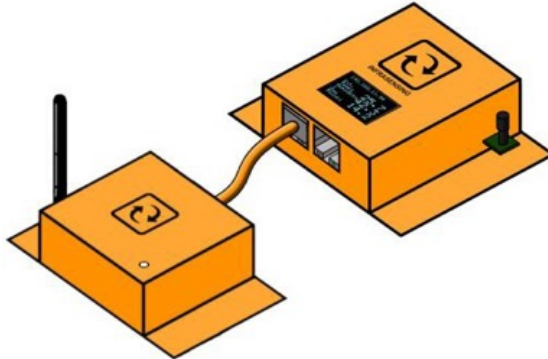


Sensors

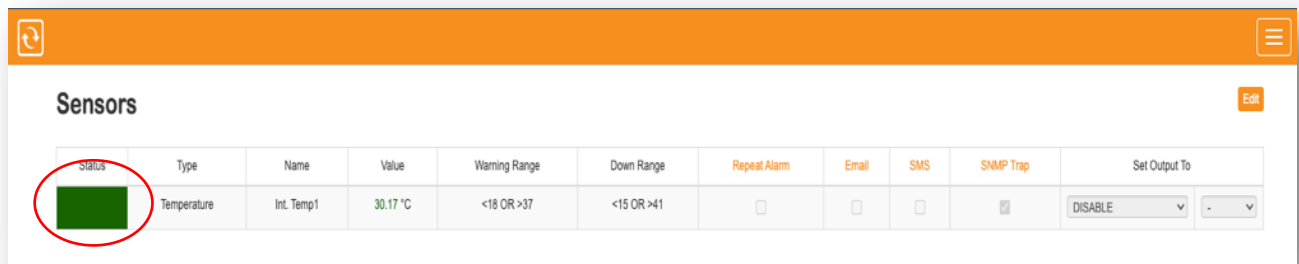
19.1 Connecting and Pairing

Connect the Wireless Hub to the Base Unit via ethernet cable.

The Base Unit should be running firmware version 8.9.



Wireless LoRa should appear in the Base Unit GUI.



Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To
	Temperature	Int. Temp1	30.17 °C	<18 OR >37	<15 OR >41	☐	☐	☐	☒	DISABLE v

On the Base Unit GUI, click on Wireless LoRa and you will be taken to the Wireless LoRa Configuration page.



Node No.	Status	Sensor Name	RSSI, dB	SNR	TX Power, dBm
Pairing Status: Not Pairing					
Start Pairing					
LoRa Band: AU/AS (915-928 MHz) v					
LoRa Channel: 1 v					
Update Reset					

Setup your Band and Channel prior to connecting nodes. After choosing your desired band and channel, click on “Update”. Changing the band and channel will disconnect any previously connected nodes and re-pairing them would be required.

It is a good practice to keep adjacent hubs in different channels to avoid wireless congestion. Also, avoid using same LoRa channel to avoid any interference.

The screenshot shows the 'Wireless LoRa Configuration' page. At the top, there is a table with columns: Node No., Status, Sensor Name, RSSI, dB, SNR, TX Power, dBm, and an empty column. Below the table, the 'Pairing Status' is 'Not Pairing' with a 'Start Pairing' button. The 'LoRa Band' dropdown is set to 'AU/AS (915-928 MHz)'. The 'LoRa Channel' dropdown is set to '1'. A note states: 'Changing LoRa Band and/or Channel will delete Pairing and would need to re-pair the sensors.' A red arrow points from the 'LoRa Band' dropdown to a list of available bands: EU (863-870 MHz), US (902-928 MHz), and AU/AS (915-928 MHz). Another red arrow points from the 'LoRa Channel' dropdown to a list of available channels: 0, 1, 2, 3, 4, 5, 6, 7, with channel 1 selected.

NOTE:

When adding a new node to an existing group of paired nodes, please note that all previously connected nodes will also be unpaired and have to be repaired again. This is done by design.

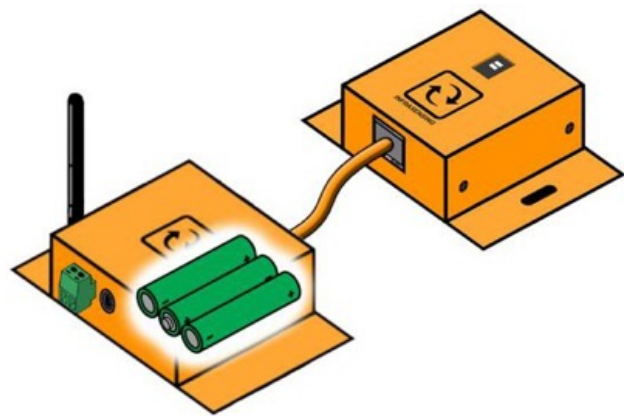
To start the pairing process, on the Wireless LoRa Configuration page, click on “Start Pairing”. The LED on the LoRa hub will blink red and green which indicates pairing mode is active.

NOTE : The pairing status will also show “Pairing” when in pairing mode.

This screenshot shows the same 'Wireless LoRa Configuration' page as the previous one, but with the dropdown menus expanded. The 'LoRa Band' dropdown is set to 'AU/AS (915-928 MHz)' and the 'LoRa Channel' dropdown is set to '1'. The 'Update' and 'Reset' buttons are visible at the bottom of the configuration section.

To pair a node, you would need to power it up and you will see the LED will blink red and green, it should stop before 5 seconds, that means that the node is paired successfully. If the LED stays ON for more than 10 seconds it would mean that the pairing failed and we would need to start over. To avoid a pairing miss we need to power and pair each node one at a time.

The node can be powered via 12v DC with a terminal block, 12v DC with a barrel jack for an AC/DC adapter, - 5v DC with a USB-C connector or 3x AAA batteries.



- NOTE:
- You can pair the node even without a sensor connected.
 - Up to 16 nodes can be connected

Click on “Stop Pairing” when done. Refresh the page and the list will populate with the connected nodes.

Wireless LoRa Configuration

Node No.	Status	Sensor Name	RSSI, dB	SNR	TX Power, dBm	
1			0	0	0	<button>Apply</button>
2			0	0	0	<button>Apply</button>
3			0	0	0	<button>Apply</button>
4			0	0	0	<button>Apply</button>
5			0	0	0	<button>Apply</button>
6			0	0	0	<button>Apply</button>

Pairing Status:

Start Pairing

Not Pairing

LoRa Band

AU/AS (915-928 MHz)

LoRa Channel

1

Update

Reset

Note

Changing LoRa Band and/or Channel will delete Pairing and would need to re-pair the sensors.

After pairing, the sensor connected to the wireless node should be ready to go.

To ensure no data is lost when transmitting, The minimum Polling Time for the Base Unit is 5 seconds when connected to a Wireless Hub.

Wireless LoRa Configuration

Node No.	Status	Sensor Name	RSSI, dB	SNR	TX Power, dBm	
1		Ext. Temp3 Humidity3 Dew Point3	-44	6	10	Apply
2		Ext. Temp4 Humidity4 Dew Point4	-74	7	10	Apply
3		Ext. Temp5 Humidity5 Dew Point5	-66	7	10	Apply
4		Ext. Temp6 Humidity6 Dew Point6	-37	7	10	Apply
5		Ext. Temp1 Humidity1 Dew Point1	-84	7	10	Apply
6		Ext. Temp2 Humidity2 Dew Point2	-71	8	10	Apply

Pairing Status:

Start Pairing

Not Pairing

LoRa Band

ALIAS (915-928 MHz)

LoRa Channel

1

Update

Reset

Note

Changing LoRa Band and/or Channel will delete Pairing and would need to re-pair the sensors.

Unpairing Nodes

To unpair connected nodes, click on “Start Pairing” then click “Stop Pairing”, this will disconnect all previously connected nodes on the hub. To start the pairing process again, please proceed to “Step 3” of this document.

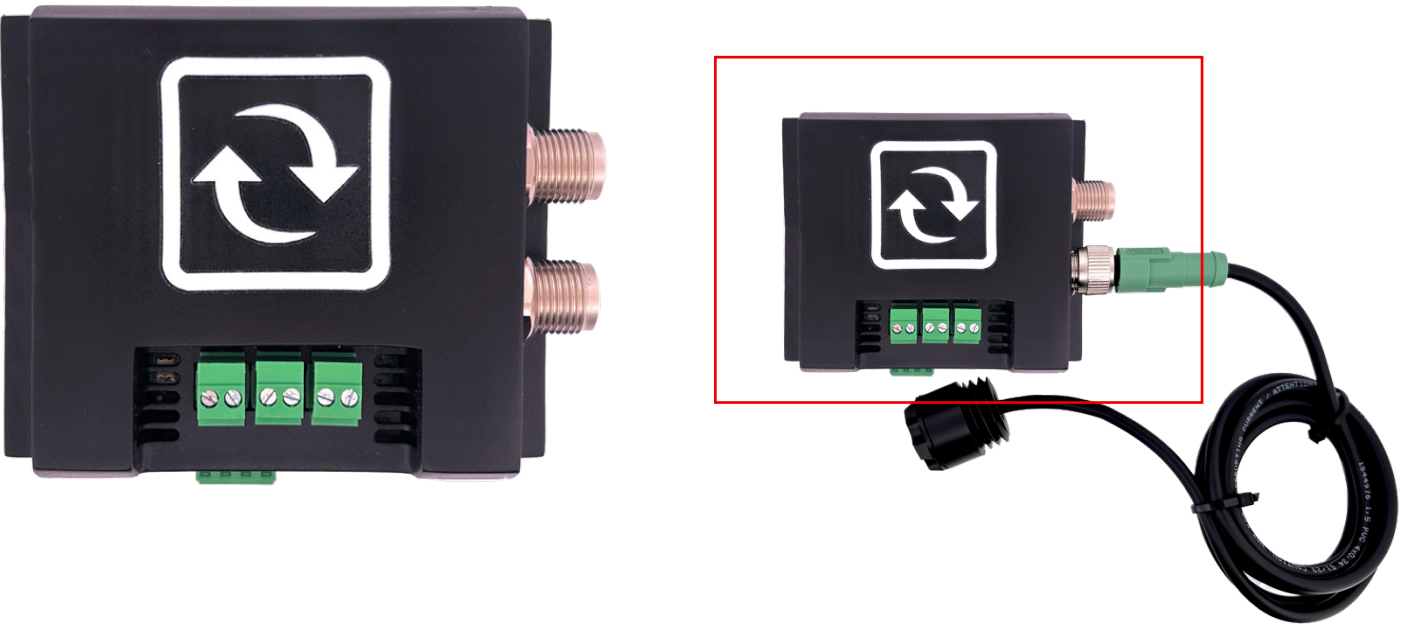
20 Expansion Hub (EXP-12HUB)



Expands the base unit from 2 to 12 ports, with integrated Daisy Starter functionality.

Expansions ports for external sensor probes	12
Powered by and communicates with	Base Unit (BASE-XX) (required) Max 1 expansion hub per Base Unit
Auxiliary power input	+12V to +24V power input
Auxiliary power output	+12V
Connectivity	RJ45 cable transmitting data & power from Base Unit to
Sensor	
Cable specification	RJ45 CAT 6/7 recommended
Power usage	235 mW
Operating temperature range	0°C to +75°C (32°F to +167°F)
Humidity (operating and storage)	<90% RH (non-condensating)
Sensor enclosure	Steel enclosure, industrial grade
Mounting option	0U rack, DIN rail, magnetic, or wall mountable sensor
Dimensions	152mm (5.98") x 96mm (3.78") x 36mm (1.42")
Weight	558.8g (1.23lb)

21 RS485 Cylindrical Expansion Hub (R-CHUB-3R)



The R-CHUB-3R features a built-in THUM and supports up to two cylindrical sensors, providing seamless integration for precise monitoring in critical applications.

Cylindrical hub:	A standalone hub that supports up to 4 cylindrical sensors
Temperature measurement range	-40°C to +125°C (-40°F to +257°F)
Temperature accuracy	±0.48°C (±0.86 °F)
Relative humidity measurement range:	0 to 100% RH
Relative humidity accuracy	2% RH
Relay outputs	3 (Normally Open)
Relay switching current and voltage	Max. 30 VDC / 250 VAC, max. 2 A / 0.5A
Input voltage	12-24V DC ±10%
Power usage	612-744mW (with 2 cylindrical sensors connected)
Protocol	Modbus RTU over RS485 Integration with BASE-XX over RJ485 (serial data)
Sensor connectivity	Two male connectors for Cylindrical sensors
Operating temperature range	0°C to +75°C (32°F to +167°F)
Humidity (operating and storage)	<90% RH (non-condensating)
Sensor enclosure	Industrial plastic enclosure
Mounting option	0U rack, DIN rail, magnetic, or wall mountable sensor
Dimensions	90.15mm (3.55") x 75mm (2.95") x 52.92mm (2.05")
Weight	118g (0.26lb)
Cable specification	RJ45 CAT 6/7 recommended

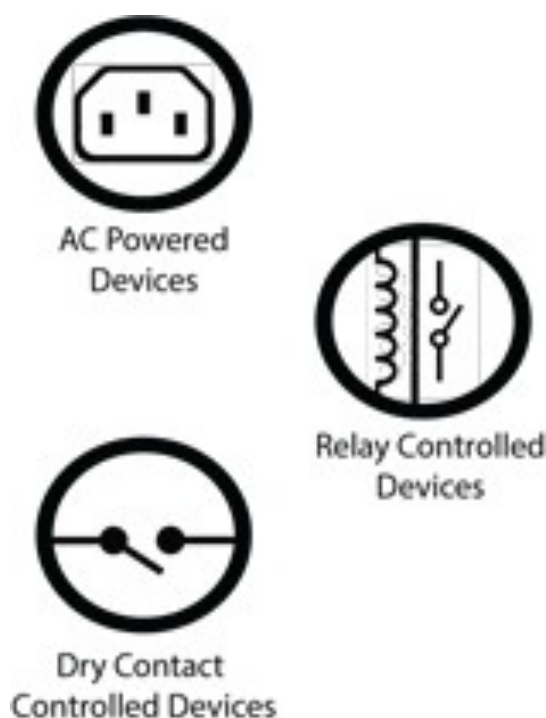
22 Automatic & remote control of equipment

The built-in alerting enables you to be informed when a sensor exceeds defined thresholds or when an incident occurs. Some of these incidents could require an immediate action. For example, when the temperature is too high one may want to start a backup cooling unit; or when water is detected then start a pump.

With InfraSensing's infrastructure monitoring solution you can now also control devices: AC, relay or Dry Contact based. Devices can be controlled either by the Base Unit in an automatic way (condition based). In this section we will cover the automatic (condition based) control.

Requirement:

To use the control features you need a Base Unit with firmware 6 or higher and with an IO sensor or a SensorHub.



Both the IO sensor and the SensorHub feature dry contact outputs. However only the SensorHub feature relay outputs. AC powered devices can be controlled through an **external relay** which connects to a dry contact port on the SensorHub.

Important Notice:

The maximum capacity for the SensorHub's relay is 400VAC/150VDC and 200VA/192W. If an output device is to be used that exceeds those specifications, an external relay, i.e. solid-state relay, will have to be used.

22.1 Triggering outputs through the web interface

The output triggering can toggle between automatic / assigned or manual/direct using the corresponding buttons on the sensor page. This requires firmware 6.00 or higher for the new Logic architecture.

Control Outputs

Name	Current Value	Default State	Control Output
Output1	OFF	OFF	CYCLE
Output2	OFF	OFF	CYCLE
Output3	OFF	OFF	CYCLE
Output4	OFF	OFF	CYCLE
Relay1	OFF	OFF	CYCLE
Relay2	OFF	OFF	CYCLE

Automatic/Assigned Output on Sensor Thresholds

The output triggering (digital and relay) can be set using the assigned threshold on a particular sensor. Simply assign an output from the drop-down menu and its state you want it to do. Several sensors can share and be assigned to a particular output.

Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To
	Temperature	Int. Temp1	29.79 °C	<= 18 >= 37	<= 15 >= 41	☐	☐	☐	☐	Output1 ON
	Input 1	Undervolt1	OK	Alert if contact state is not Open	for more than 500 ms	☐	☐	☐	☐	Output2 OFF
	Input 2	Undervolt2	OK	Alert if contact state is not Open	for more than 500 ms	☐	☐	☐	☐	Output3 CYCLE

****so to say after meeting a threshold, it can direct a device to either turn on or off****

Let's for example configure a scenario where we want to trigger a backup air conditioning unit when the thresholds are exceeded.

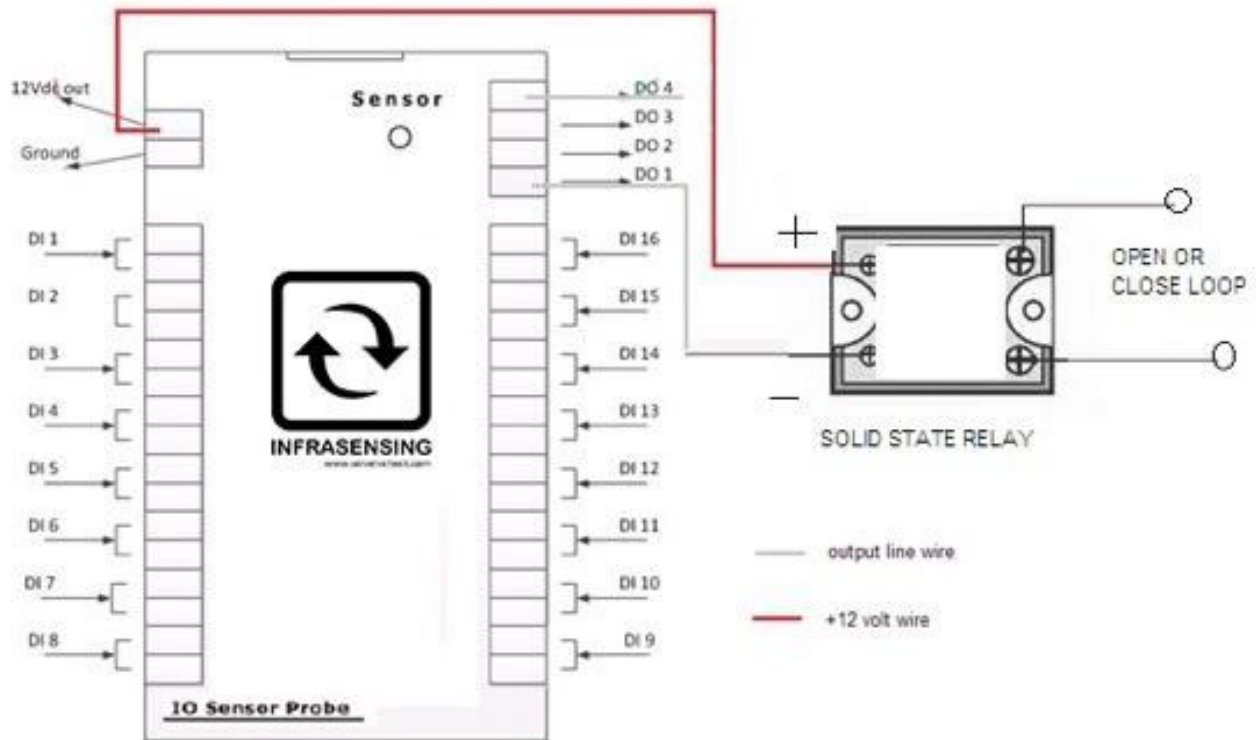
Go to your temperature sensor and select the correct output and the state it should be in, as shown below

Status	Type	Name	Value	Warning Range	Down Range	Repeat Alarm	Email	SMS	SNMP Trap	Set Output To
	Temperature	Int. Temp1	32.05 °C	<15 OR >35	<10 OR >40	☐	☐	☐	☐	Output1 ON

- Based on the image, the temp threshold danger levels is when it reaches 40 or above and 10 or less thus will trigger the device connected to the "Output1" to turn ON
- Thus if an Air-condition unit is connected to "Output1" if the temperature rises above 40 it will turn ON automatically

22.2 Wiring for a control output

Now that we have those configured, for the output wiring, kindly refer to **section 21.1**. If an external relay will be used, refer to the following diagram:

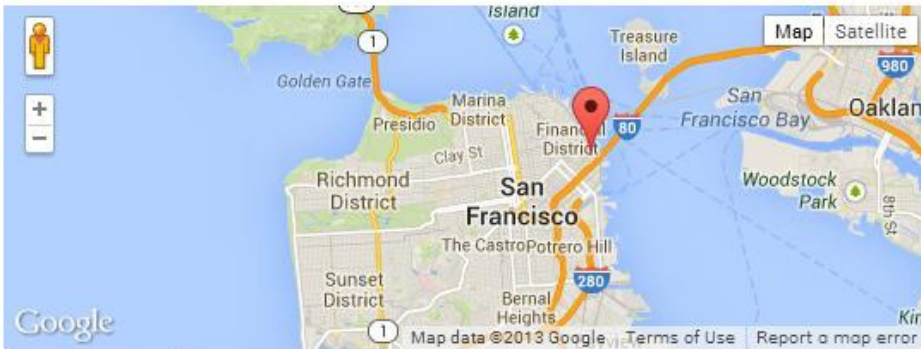


22.3 Geomapping Sensors

For a more organized view of your over-all monitoring infrastructure, you could setup the location of each of your Base Units.

From the “Devices” tab, click “Location” to set it up.

Edit Device Location



Drag the marker to improve your search.

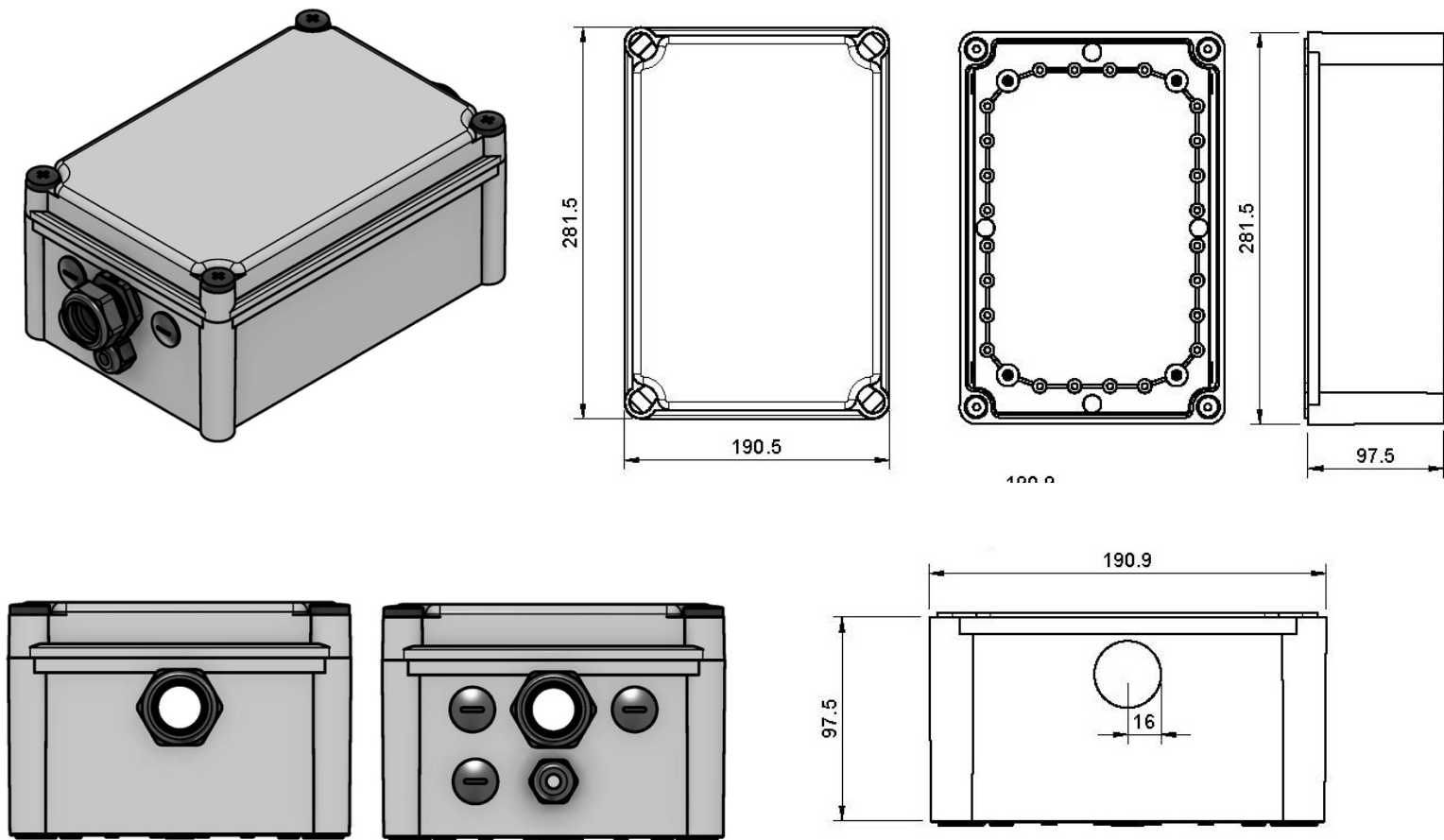
Lat: Long:

After updating it, you could now navigate to the “Map” tab and view the configured devices.



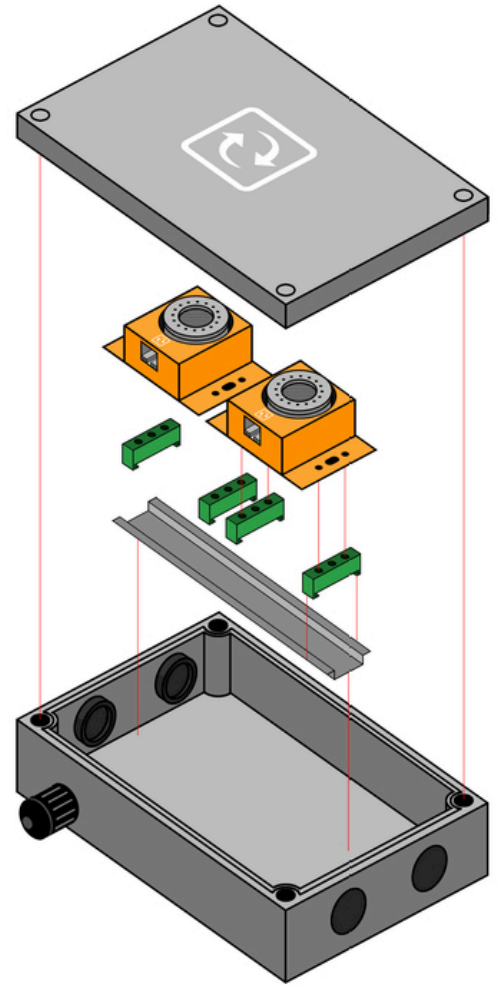
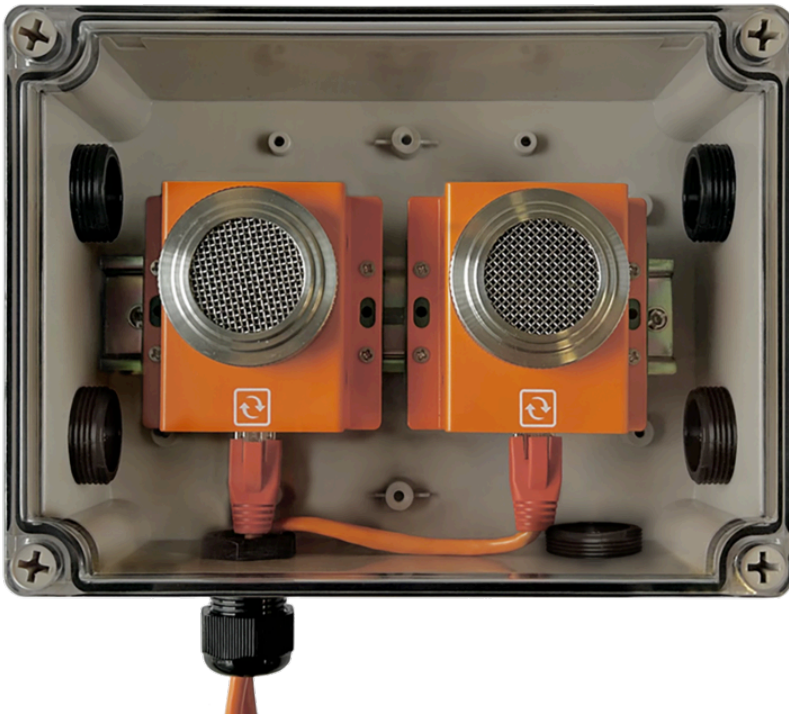
23 Accessories

23.1 Aspirating Smoke Detector Box (AX-ASD-BOX)



The Aspirating Smoke Detection (ASD) Box is designed to provide early fire detection in sensitive environments that can attach up to 6 InfraSensing Sensors. With a network of air-sampling tubes, this advanced system actively monitors for the presence of smoke particles, allowing for the detection of fire hazards before visible signs appear. The ASD box is ideal for high-risk areas, offering protection in environments like data centers, clean rooms, and industrial spaces where traditional smoke detectors may be insufficient.

23.2 IP65 Sensor Protection Box (AX-BOX-IP65)



The Environmental Protection Enclosure IP Box is designed to safeguard sensors from outdoor environments. With sufficient airflow, this IP65 rated enclosure allows you to deploy any type of sensor outside, providing protection against weather conditions, falling debris, dust, oil and other non-corrosive materials.

23.3 Gas-Bump (AX-GAS-BUMP)

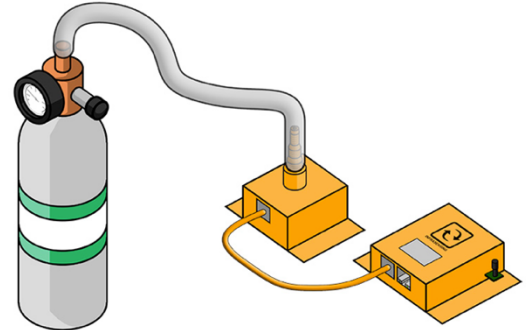
The GAS-BUMP adapter is specifically designed for bump testing our gas sensors. It allows for easy connection of any tubing provided by your local gas supplier to the gas sensor.



SIDE VIEW



TOP VIEW

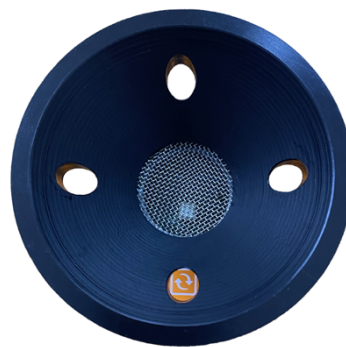


23.4 Gas-Cone (AX-GAS-CONE)

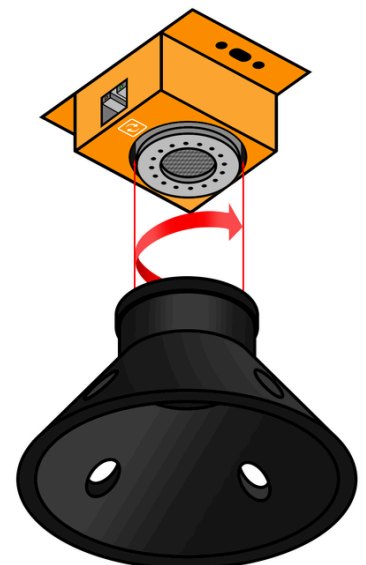
The GAS-BUMP adapter is specifically designed for bump testing our gas sensors. It allows for easy connection of any tubing provided by your local gas supplier to the gas sensor.



SIDE VIEW



TOP VIEW

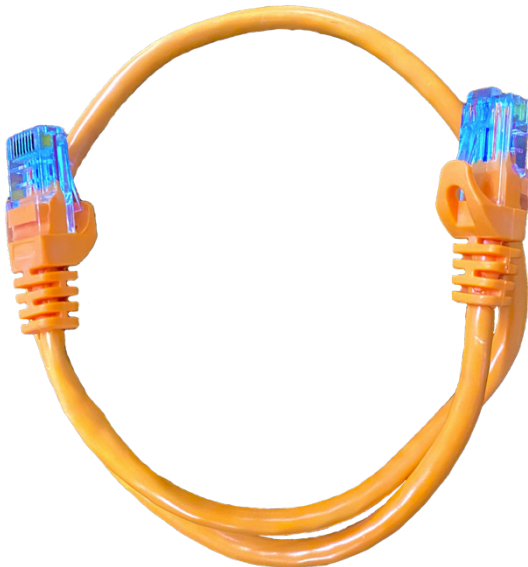


23.5 Prevent-iON Pouch (AX-POUCH-PI)



The Prevent-iON pouch (AX-POUCH-PI) is a kit for carrying the R-GAS-FLAMMABLE, AX-USB-RJ45 adapter and gas cone for bump tests and product demos.

23.6 RJ45 Cable (SPARE-RJ45)



The SPARE-RJ45 cable is designed for seamless connectivity and reliable performance. It ensures proper communication between devices and supports both data and power transmission, depending on system requirements.

23.7 USB-RJ45 (AX-USB-RJ45)



The AX-USB-RJ45 cable is specifically engineered to provide seamless connectivity and stable data transmission between your sensor and your Android device via the Prevent-iON Companion App, which is included with the unit and comes with one year of free upgrades - ensuring reliable performance and effortless configuration.

23.8 USB-RJ45 (AX-USB-RJ45-SM)

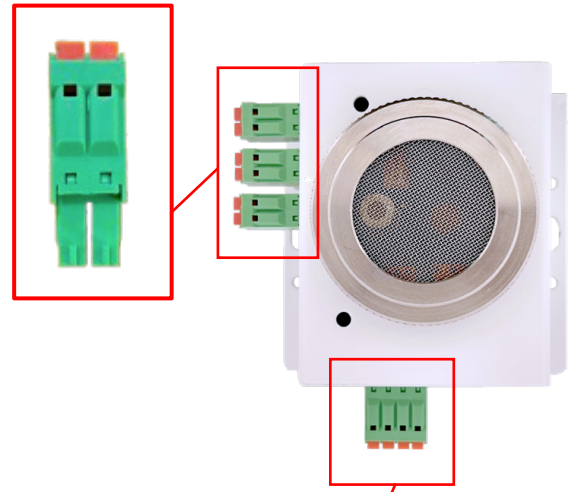


The AX-USB-RJ45-SM cable is specifically engineered to provide seamless connectivity and stable data transmission between your SwitchMon device and an Android device via the SwitchMon Companion App. The app is included with the unit and comes with one year of free upgrades, ensuring reliable performance and hassle-free configuration.

23.9 Terminal Block

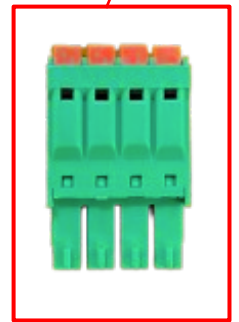
23.9.1 Terminal Block (AX-TERM-BLOCK-2POS)

The AX-TERM-BLOCK-2POS is a screwless 2-pin terminal block that offers a quick and secure electrical connection without the need for screws. Designed for easy installation and strong conductivity, it ensures stable wiring in power distribution, signal connections, and control systems.



23.9.2 Terminal Block (AX-TERM-BLOCK-4POS)

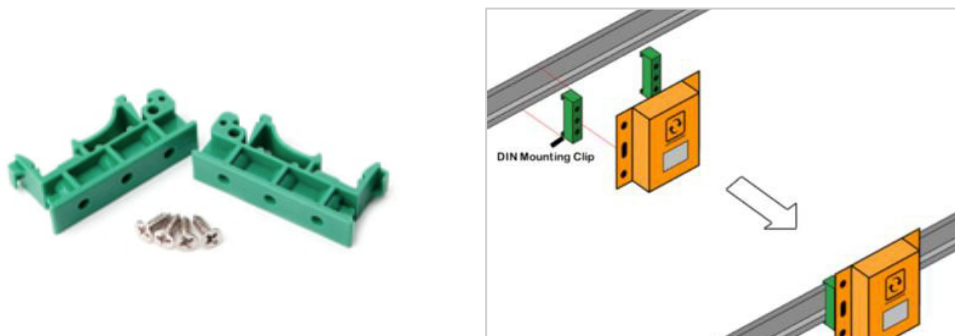
The AX-TERM-BLOCK-4POS is a screwless 4-pin terminal block that offers a quick and secure electrical connection without the need for screws. Designed for easy installation and strong conductivity, it ensures stable wiring in power distribution, signal connections, and control systems.



23.10 Sensor Mounts

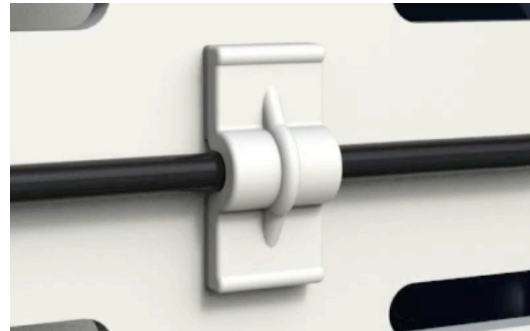
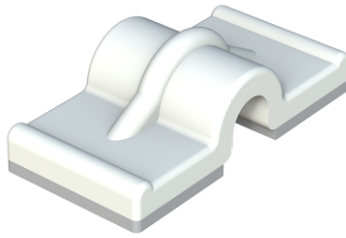
23.10.1 SPARE-DIN-CLIP AX-DIN-CLIP)

Most of our sensors feature DIN mounting provisions that can be easily secured to DIN mounting clips using standard screws with a head diameter of at least 0.6 cm (0.24 inch).



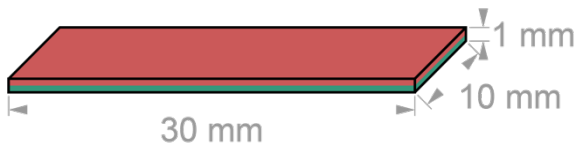
23.10.2 LEAK CABLE CLIPS (AX-LEAK-CLIP)

Most of our sensors feature DIN mounting provisions that can be easily secured to DIN mounting clips using standard screws with a head diameter of at least 0.6 cm (0.24 inch).



23.10.3 SPARE-MAGNET (AX-MAGNET)

The SPARE-MAGNET is used to mount our Base Unit, add-ons, hubs and most sensor feature a metal enclosure using simple magnets.



24 Power Rating

A Base Unit can be provided with up to 12 watts of power from a PoE source. Because of this, careful power budgeting should be done especially when probes like the IO, QoS, and fuel sensors are to be utilized. Below shows the power ratings of InfraSensing sensor modules:

MODULE	POWER RATING
BASE-5 Base Unit	552 mW
BASE-6 Base Unit	876 mW
BASE-SM-5-24V Base Unit	684 mW
BASE-SM-6 Base Unit	900-1752 mW
BASE-PI-5-24 Base Unit	684 mW
BASE-PI-6 Base Unit	900-1752 mW
ADDON-LTE LTE/3G/2G Cellular Add-On	2800 mW
ADDON-WIFI Wifi Add-On	720 mW
ADDON-POE 24v/-48v DC Power Add-On (PoE injector)	48v DC via POE; max 22W
EXP-8HUB SensorHub for Base Unit	235 mW
EXP-LWHUB Wireless Hub	720 mW
NODE-LW-1P Wireless Node	720 mW
THIMG-XS Thermal Imaging Sensor (extra small)	492 mW
THIMG-SM Thermal Imaging Sensor (small)	492 mW
THIMG-ME Thermal Imaging Sensor (medium)	492 mW
THIMG-LG-2 Thermal Imaging Sensor (Large)	492 mW
C-THIMG-SM Thermal Imaging Sensor (CS)	492 mW
THIMG-IRSPOT Infrared Spot Temperature Sensor	60 mW
C-THIMG-SM-IRSPOT Infrared Spot Temperature Sensor (CS)	60 mW
ENV-THUM Temperature and Humidity Sensor	60 mW
ENV-TEMP Temperature Sensor	60 mW
C-ENV-THUM Temperature and Humidity Sensor (CS)	120 mW
ENV-TSURFACE Industrial Surface Temperature Sensor	60 mW
ENV-TSTAIN Steel Temperature Sensor	60 mW
ENV-TULTRA Ultra Low Temperature Sensor	60 mW
ENV-TEMP-MAGNET Temperature Magnet Sensor	120 mW
ENV-LHD Linear Heat Trace Sensor	468 mW
DAISY-STARTER Daisy Chain Sensor Start Unit	288 mW
DAISY-BOOSTER Daisy Chain Booster	300 mW
DAISY-THUM Daisy Chain Temp & Humidity Unit	120 mW
DAISY-TEMP Daisy Chain Temperature Sensor Unit	120 mW
DAISY-IRSPOT Daisy Chain IR Spot Temperature Sensor	60 mW
DAISY-TEMP-MAGNET Daisy Chain Temperature Magnet Sensor	120 mW
DAISY-VOC Daisy Chain VOC, Temperature & Humidity Sensor	120 mW
C-DAISY-THUM Daisy Chain Temp & Humidity Unit (CS)	120 mW
ENV-NOISE Digital sound & noise level (dbA) sensor	312 mW
ENV-AIRFLW Digital Airflow Sensor	84 mW
ENV-AIRPRESSURE Differential Air Pressure Sensor	96 mW
ENV-PARTICLE Particle Sensor	156 mW
ENV-CORROSION Atmospheric Corrosion (ACM) Sensor	260 mW
ENV-DUST Optical Dust Particle Sensor	156 mW
ENV-LEAK OPTICAL Optical Oil & Hydrocarbon Leak Sensor	2.1 W
ENV-WLEAK-COMBO Water Detection & Flooding Sensor	264 mW

MODULE	POWER RATING
GAS-VOC	120 mW
GAS-A1 Refrigerant A1 Gas Sensor	600 mW
GAS-A2L Refrigerant A2L Gas Sensor	600 mW
GAS-A3 Refrigerant A3 Gas Sensor	600 mW
EGD-O3 Ozone Gas Sensor	216 mW
EGD-SF6 Sulfur Hexafluoride Gas Sensor	1240mW
R-EGD-PANEL	0.4-4.4W
R-GAS-FLAMMABLE	678-1400mW
PWR-AC-FAIL AC Power Failure Sensor	216 mW
PWR-DC-VOLT DC Voltage Sensor	530 mW
PWR-AC-QUAL AC Power Quality Sensor	460 mW
PWR-AC-CUR AC Current (Power Usage) Sensor	384 mW
PWR-FUEL Ultrasonic Fuel Level Sensor	1008 mW
PWR-GROUND Grounding Sensor	456mW
PWR-BAT-STRING Battery Monitoring - Control Module	500 mW
PWR-BAT-CELL Battery Monitoring - Battery Module	500 mW
SEC-DOOR Door Contact Sensor	240mW
SEC-SHOCK Digital Shock / Vibration Sensor	156mW
SEC-LUX Light Sensor	83mW
SEC-SMOKE Smoke Sensor	240mW
SEC-TILT Tilt Sensor	240mW
SEC-MOTION Motion Sensor	252mW
SEC-SOUND Noise triggered security sensor	144mW
IND-IO IO-Dry Contact Sensor	516mW
IND-0-10V Industrial 0-10V	660 mW
IND-4-20mA Industrial 4-20mA	660 mW
ENV-WSPOT Water Spot Sensor	288 mW

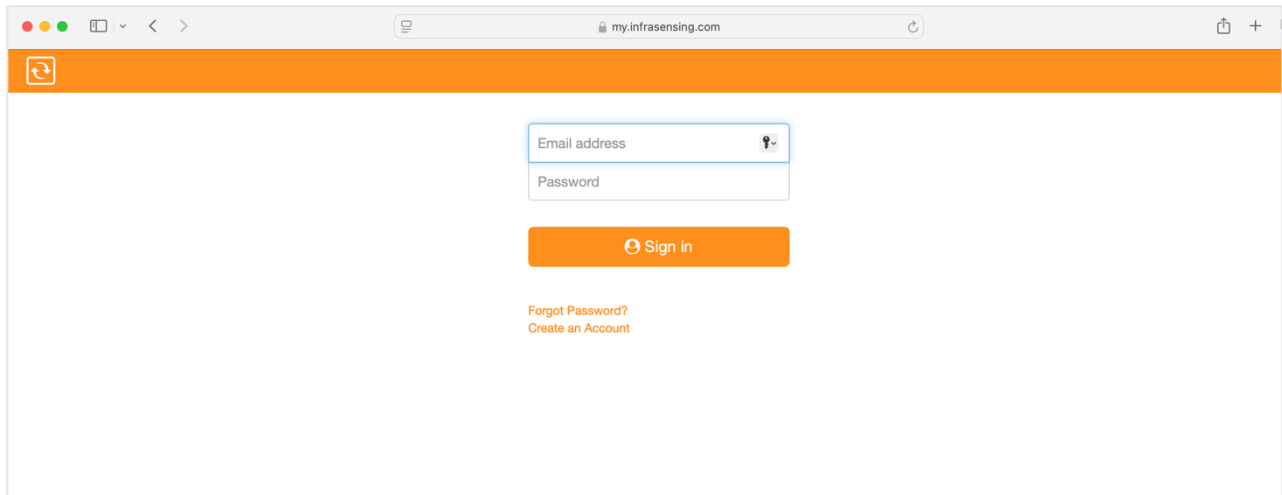
With the given power ratings, for best practices, the fuel sensor, power meter sensor probes, QoS probe and the wireless hub should be connected to a dedicated Base Unit as they are more resource intensive in power and memory than the other ones. Know, however, that in the mentioned list, it would be completely fine to use 2 of them in combination on a single Base Unit (i.e. Base Unit with IO and QoS probes).

25 Product Registration

The main purpose of **Product Registration** is to help you keep track of your device, including its warranty status, purchase date, help you file an RMA request and for firmware updates. While registration is not mandatory, we highly encourage users to register their devices to stay informed and ensure timely updates.

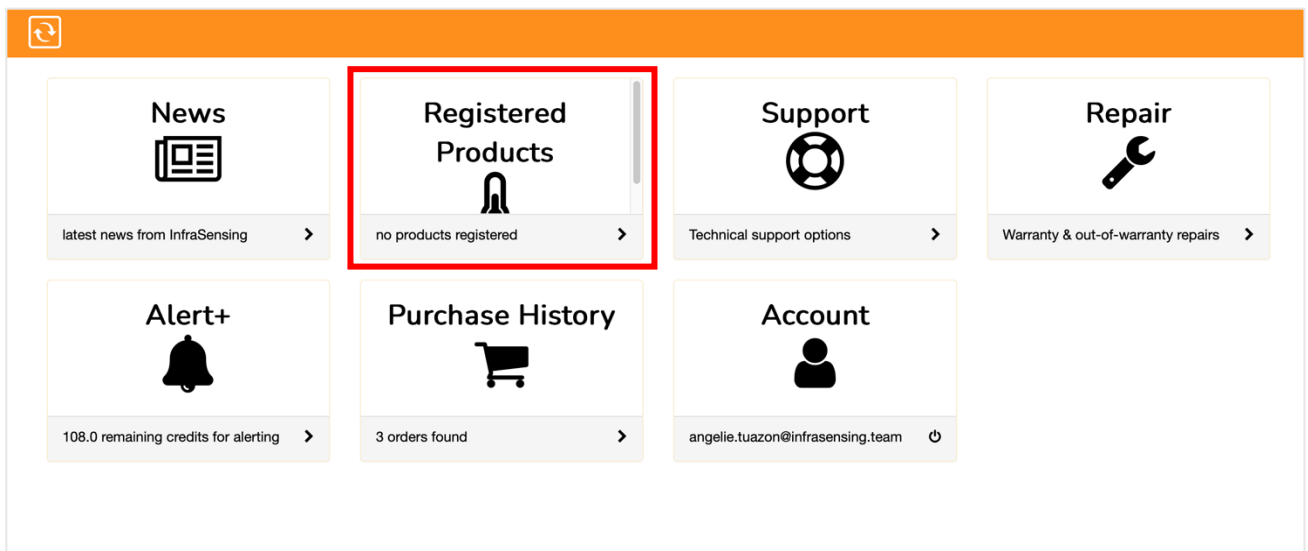
25.1 How to Register your Hardware:

1. Log in to your my.infrasensing.com account. Use your credentials to access your account



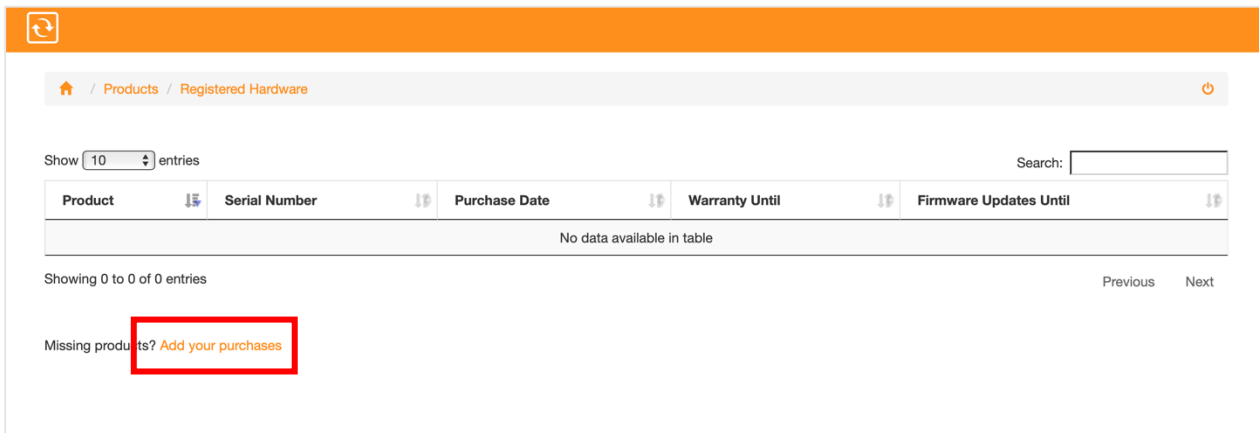
A screenshot of a web browser showing the login page for my.infrasensing.com. The page has a white background with an orange header bar. In the center, there is a login form with two input fields: 'Email address' and 'Password'. Below these fields is an orange 'Sign in' button. Under the button, there are two links: 'Forgot Password?' and 'Create an Account'.

2. Once logged in, go to **Registered Products** section.

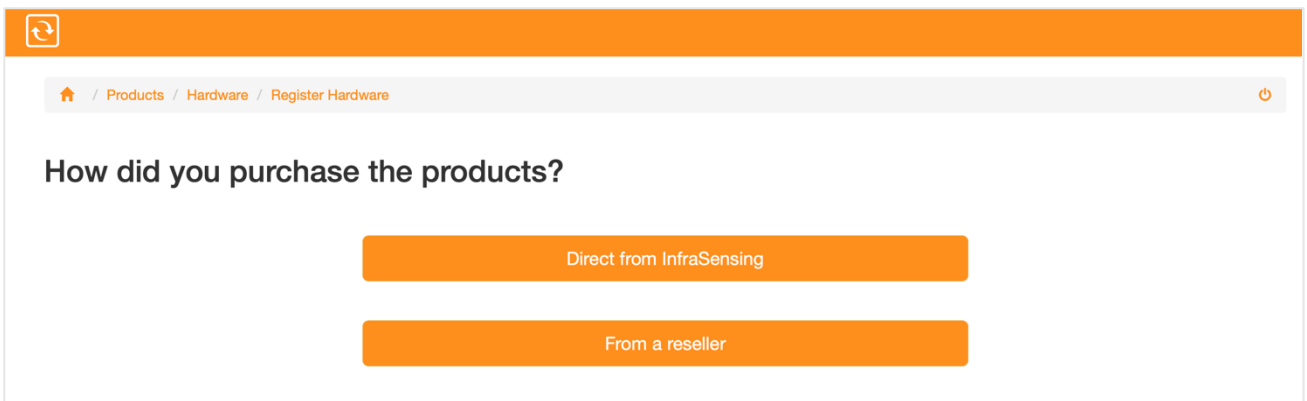


Here, you can view all the products you have registered. In the sample image below, no products have been registered yet.

3. To register a new device, click on **Add Your Purchase**.

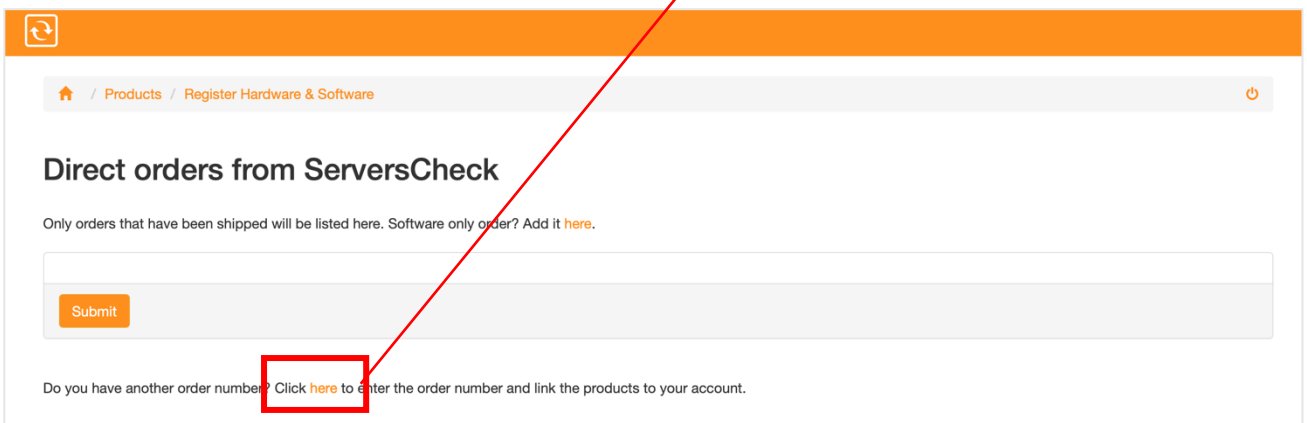


4. You will be prompted to select your purchase method. Choose how you purchased the product.



4.1. Direct Purchase from InfraSensing

- Click **“Direct From InfraSensing”**
- Make sure you have your InfraSensing order number ready.
- Only orders that have been shipped will be listed here. However if you have an order number click on the **“here”** button to enter the order number.



- Once you click the **“here”** button, you will be redirected to a page where you can enter your **InfraSensing order number** in the designated field, then click **Submit** to complete the step.

Order from InfraSensing

InfraSensing order number

The InfraSensing order number is an alphanumeric number that you should find on your invoice or shipping paperwork

Submit

Don't have an order number? Click [here](#) to continue.

4.2. Direct Purchase From a Reseller

- Click **“From a reseller”**
- You’ll be asked whether you have an InfraSensing Order number.

Do you have an InfraSensing order number?

I have an InfraSensing order number from my reseller

I don't have an InfraSensing order number

An InfraSensing order number enables us to automatically link an order in our systems to your account.
When you don't have such an order number then we will ask you to upload your invoice from the reseller. Upon verification we will add the products to your account.

- If **YES**, select **“I have an InfraSensing order number from my reseller”**, and input it on the next screen.
- If **NO**, select the option to continue without an order number. You’ll be redirected to a form where you can enter the necessary details and submit your registration.

Please note that in order to add your purchase to your account you will need to send a copy of your invoice from the reseller and allow 1-2 business days to review the information you sent and to process it.



[Home](#) / [Products](#) / [Register Hardware](#) 

Order from a reseller

In order to add your purchase to your account kindly send us a copy of your invoice from the reseller.
Allow 1-2 business days to review the information you sent and to process it.

Order date

Select day

Select month

Select year

Copy of your invoice

Choose File

no file selected

PNG, JPG or PDF format accepted (max 4MB)

Submit

Do you have an InfraSensing order number? Click [here](#) to continue.

5. Once your device is registered, it will appear in your dashboard with the following information.



[Home](#) / [Products](#) / [Registered Hardware](#) 

Show

10

 entries Search:

Product	Serial Number	Purchase Date	Warranty Until	Firmware Updates Until
EXP-8HUB		2022-11-25	2023-11-25 	2023-11-25 
ENV-TSURFACE		2021-07-16	2022-07-16 	2022-07-16 
ENV-THUM		2022-11-25	2023-11-25 	2023-11-25 
ENV-TEMP		2022-11-25	2023-11-25 	2023-11-25 
BASE-5		2017-10-24	2018-10-24 	2018-10-24 
BASE-5		2017-07-27	2018-07-27 	2018-07-27 
BASE-5		2017-07-27	2018-07-27 	2018-07-27 
BASE-5		2020-02-10	2021-10-06 	2021-02-09 
BASE-5		2022-09-07	2023-09-07 	2023-09-07 
BASE-5		2020-10-06	2021-10-06 	2021-10-06 

Showing 1 to 10 of 12 entries Previous

1 2

 Next

Missing products? [Add your purchases](#)

25.2 Managing your Registered Device

On this page, you can easily view your device's purchase date, check its warranty status, submit an RMA request, and access the latest firmware updates available for your device



[Home](#) / [Products](#) / [Registered Hardware](#) 

Show entries Search:

Product	Serial Number	Purchase Date	Warranty Until	Firmware Updates Until
EXP-8HUB		2022-11-25	2023-11-25 	2023-11-25 
ENV-TSURFACE		2021-07-16	2022-07-16 	2022-07-16 
ENV-THUM		2022-11-25	2023-11-25 	2023-11-25 
ENV-TEMP		2022-11-25	2023-11-25 	2023-11-25 
BASE-5	:	2017-10-24	2018-10-24 	2018-10-24 
BASE-5		2017-07-27	2018-07-27 	2018-07-27 
BASE-5		2017-07-27	2018-07-27 	2018-07-27 
BASE-5		2020-02-10	2021-10-06 	2021-02-09 
BASE-5		2022-09-07	2023-09-07 	2023-09-07 
BASE-5		2020-10-06	2021-10-06 	2021-10-06 

Showing 1 to 10 of 12 entries Previous 2 Next

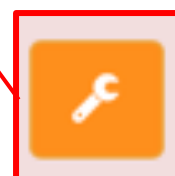
Missing products? [Add your purchases](#)

25.2.1 RMA Request

If you encounter any issues with your sensor and require an **RMA**, you can easily initiate the process on this page. Simply click on the **Warranty** section for the device you wish to process an RMA for, and you will be directed to the **RMA Wizard**. Here, you can request an RMA, select the device needing repair, and describe the issue.

Product	Serial Number	Purchase Date	Warranty Until	Firmware Updates Until
EXP-8HUB	asdasdasdasdasdas	2022-11-25	2023-11-25 	2023-11-25 
ENV-TSURFACE	Unknown 	2021-07-16	2022-07-16 	2022-07-16 

If you need to process an RMA request, click on this icon.



If you encounter any issues with your sensor and require an RMA, you can easily initiate the process on this page. Simply click on the Warranty section for the device you wish to process an RMA for, and you will be directed to the RMA Wizard. Here, you can request and RMA, select the device needing repair, and describe the issue.

[Home](#) / [RMA](#) / [Request RMA](#) / RMA Product Selection

This RMA wizard enables you to request a ServersCheck Return Merchandise Authorization (RMA) to return the defective product for repair. You will need the serial number of the product(s).
Product missing? Click [here](#) to add missing products to your hardware list.

Product Selection & Issue Description

Product 1

Product Type
Select a product type

Serial Number

Problem Description

Next >>

25.2.2 Firmware Updates

You can also view and download the latest release notes for firmware update.

- To check for the latest firmware available for your device, click on the **Firmware Updates Until** section for your device.

Product	Serial Number	Purchase Date	Warranty Until	Firmware Updates Until
ENV-TEMP	asdasdasdsasdas		2023-11-25	2023-11-25
BASE-5	SGW2015080717472022		2018-10-24	2018-10-24

Click on this icon to check the firmware Updates of the device you want to check.



- Based on the image below, for example if you check the Firmware updates under BASE-5, you will see details such as the **Firmware Version**, **Release Date**, **Eligible Serial Numbers**, and a **Download Link** for the firmware.



[Home](#) / [Products](#) / [Firmware Download for BASE-5](#)

⚠ The firmware may only be downloaded onto the registered units matching the serial numbers. For units not listed a firmware update must be purchased.

Release Notes

Show entries
 Search:

Product	Firmware Version	Firmware Release Date	Eligible Serial Numbers	Download Link
BASE-5	9.2	2024-03-15		Unavailable
BASE-5	9.1	2023-11-15		Download
BASE-5	9.0	2023-03-17		Download
BASE-5	8.10	2022-10-21		Download
BASE-5	8.9	2022-07-26		Download
BASE-5	8.8	2022-05-18		Download
BASE-5	8.7	2022-01-12		Download
BASE-5	8.6	2021-01-06		Download
BASE-5	8.5	2020-08-26		Download
BASE-5	8.4	2020-04-06		Download
BASE-5	8.3	2020-02-24		Download
BASE-5	8.2	2020-02-10		Download
BASE-5	8.1	2019-07-01		Download
BASE-5	8.0	2019-02-12		Download
BASE-5	7.5	2018-07-05		Download
BASE-5	7.4	2017-11-23		Download

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Next

26 RMA / Repair

Defective InfraSensing hardware can be returned to one of our repair centers through our Return Merchandise Authorization (RMA) program.

RMA requests have to be submitted through your [order page](#) or from your my.infrasensing.com account.

If purchased from a reseller, add your products to your my.infrasensing.com account.

Warranty covered repairs:

All InfraSensing products are covered by a limited 1 year world-wide warranty as detailed [here](#).

If the defect to your product(s) is covered by the warranty, then the product(s) will be diagnosed, repaired or replaced and finally tested before returning the product(s) to you.

If the defect is found to be not warranty covered, then an inspection fee of \$75 per product will be invoiced.

After payment reception of the inspection fee you have 3 options: receive the defective product(s) back, have it repaired (if repairable) or purchase of a new product(s). In the event of a repair or purchase of new product(s), the cost will be discounted with the paid inspection fee.

Out of warranty repairs:

Do you have a defective device outside of its warranty period or is the defect not covered by warranty? It might still be possible to repair it. In such an event, you can also apply for an out of warranty repair. This incurs an inspection fee of \$75. After receiving payment for the inspection fee, the RMA will be issued to you. If the device can be repaired, then you will receive a quote for repair with a discount for the paid inspection fee. You may also opt for the purchase of a new unit with a discount for the paid inspection fee.

Depending on the complexity of the defects and availability of parts, you should expect a turn-around time of 2 to 5 weeks. We appreciate your patience while we try to repair the defective units.