

SERVERSCHECK

www.serverscheck.com

Sensors Platform User Manual

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This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

For safety reasons, the SensorGateways (base units) and sensor probes may never be moved, fully or partially covered while operating.

Warranty:

For the warranty on this product please visit <https://serverscheck.com/>
OPENING SENSORGATEWAY OR EXTERNAL SENSOR PROBE VOIDS THE WARRANTY

Certifications:

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

ServersCheck sensors were tested and certified by following international certification bodies:



Table of Contents

1. ServersCheck Sensors Overview	6
1.1. Unboxing video of the ServersCheck sensors	6
1.2. SensorGateway Quick Overview	6
1.3. Configuring the SensorGateway to the Network	7
1.4. SensorGateway Discovery Tool	7
1.5. Set your PC in the same network segment as the SensorGateway	7
1.6. Connecting to the SensorGateway via the Default IP	9
1.7. Int. Ping	13
1.7.1. How to set it up	13
1.8. External Sensor Probes	13
1.9. Add-Ons for the Base Unit	14
1.9.1. Wireless Add-On	14
1.9.2. Features	15
1.9.3. Specifications	15
1.9.4. View of the Wireless Add On Connected to the Gateway	15
1.9.5. Hardware Interface	16
1.9.6. Getting Started	17
1.9.7. How to access the Graphical User Interface (GUI)	18
1.9.8. Username and Password Settings	20
1.9.9. Configuration Modes	21
1.9.9.1. Wireless Router	21
1.9.10. Access point	24
1.9.11. Client	24
1.9.12. Wireless Add-On with USB Modem	26
1.9.12.1. Configuration	26
2. Connecting the ServersCheck Sensor Probes	29
2.1. General Instructions	29
3. Environmental Sensors	30
3.1. View of Temperature Sensor	30
3.2. View of Temperature&Humidity Sensor	30
3.3. View of Flooding Sensor (Monitors an Area)	31
3.4. View of Stainless Steel Temperature Probe	31
3.5. Stainless Steel Temperature Sensor & Flooding Sensor Assembly	32
3.6. View of Spot Detection Sensor (monitors a specific spot)	34
3.7. View of the Airflow Sensor	35
3.8. Thermal Imaging Sensor	36
3.9. Installation	36
3.10. Specifications	37
4. Power Sensors	38
4.1. View of Power Failure Sensor	38
4.2. View of Current Sensor	38
4.3. View of DC Power Voltage Sensor	40
4.3.1. Power DC meter as a stand alone (PWR-DC-METER)	41
4.3.2. Basic Wiring Diagram	41
4.4. View of IP68 Ultrasonic Fuel Level Sensor	44
4.4.1. Features	45
4.4.2. Technical Specifications	45
4.4.3. Dimensions	45
4.4.4. Mounting and Installation	46
4.4.5. Tips and Example Installations	47
5. Using the Wireless Sensors	51
5.1. Connect wireless hub to SensorGateway	51
5.2. Connect a wireless sensors to wireless hub	52
5.3. Check wireless sensor connection status	53
5.4. Disconnect a wireless sensor to a wireless hub	53
5.5. Restrictions	53
5.6. Reconnection Window	53

5.7. Changing the MAC Address.....	54
5.8. SensorGateway Interface Overview.....	55
5.9. HTTPS Access.....	55
5.10. Configuring the SensorGateway's access security.....	56
5.11. Configuring the Fahrenheit / Celsius readings.....	57
5.12. Sensor Polling/Refresh Time.....	57
5.13. Configuring internal clock of the SensorGateway	58
5.14. Configuring the SensorGateway for SNMP.....	61
5.15. SNMP Get Requests	61
5.16. SNMP Traps.....	64
6. Email alerting from SensorGateway.....	67
6.1. Gmail as E-mail Server (https://mail.google.com)	68
6.2. Outlook mail as E-mail Server (https://outlook.live.com)	70
6.3. Using ServersCheck Premium Email (https://my.serverscheck.com).....	72
7. SMS alerting from SensorGateway	79
7.1. Voice Call Alerts.....	82
8. Setting threshold values in the SensorGateway for alerting	84
9. Logging	85
9.1. Alert Log	85
9.2. JSON.....	86
9.3. XML Output	88
10. Sensor Calibration	89
10.1. Tolerance level.....	90
11. Factory resetting of SensorGateway	91
11.1. SensorGateways v1 and v2	91
11.2. SensorGateways v3 and v4	92
11.3. SensorGateway v5	93
12. Updating the firmware of the SensorGateway	94
12.1. SensorGateway's LED table	96
12.2. OLED Display Subscripts.....	97
12.3. Rack mounting the SensorGateway.....	98
12.4. Dimensions of the sensor gateway.....	98
13. Industrial Sensor.....	99
13.1. The IO Sensor Probe – 16 Dry Contacts IN & 4 OUT.....	99
13.2. General Description	99
13.3. Specifications	99
13.4. Applications.....	99
13.5. Terminal Description.....	100
13.6. Mounting instructions.....	100
13.7. Basic Wiring Diagram.....	100
13.8. SensorGateway IO Sensor Probe Interface.....	104
13.9. Wiring configuration and settings (anti tampering)	105
13.10. I/O Probe Interface	108
13.11. Output Triggering.....	108
14. Security Sensors	110
14.1. General Description	110
14.2. View of Door Sensor	110
14.3. View of Motion Sensor	111
14.4. View of Smoke Sensor.....	111
14.4.1. Installation guide for Security Smoke Sensor	111
14.4.2. How to turn off Alarm after Smoke Detection.	112
14.5. Sound Sensor	113
15. The Sensor hub.....	114
15.1. General Description	114
15.2. Specifications	114
15.3. Probe Restrictions.....	114
15.4. Connecting the SensorHub to the SensorGateway	115
15.5. 25.5.Terminal Connections	116
15.6. Basic wiring	116

15.7.	Sensorhub web interface	118
16.	The Multi-Sensor and Hub	119
16.1.	General Description	119
16.2.	Built-in Sensors	120
16.3.	Technical Specifications	120
16.4.	Terminal Description.....	120
16.5.	Connecting The Sensor Gateway	122
16.6.	Multi-Sensor and Hub Web Interface	124
17.	Automatic & Remote Control of Equipment	125
17.1.	Triggering outputs through the web interface	127
17.2.	Wiring for a control output.....	128
18.	Mobile SensorGateway	129
18.1.	Requirements and Specification	129
18.2.	SIM Card.....	130
18.3.	Internet Connectivity Options	131
18.4.	Cloud Platform	132
18.5.	Registration	132
18.6.	SensorGateway Identification.....	132
18.7.	Sensor Dashboard	133
18.8.	Trigger control outputs via the Cloud	134
18.9.	Alerts	136
18.10.	Threshold Alerts.....	136
18.11.	If-Then (IFT) Alerts	137
18.12.	Geomapping sensors.....	139
19.	Power Rating	140
20.	RMA / Repair	141

Note:

For technical support kindly visit <https://serverscheck.com/support>

For our ServersCheck+ Subscription, Devices should be registered in to your account before subscribing.

Register and access your account through this link <https://my.serverscheck.com>

1. ServersCheck Sensors Overview

1.1. Unboxing video of the ServersCheck sensors

We invite you to watch following unboxing video before unpacking, installing and configuring your ServersCheck sensors:

<https://serverscheck.com/sensors/>



1.2. SensorGateway Quick Overview

The SensorGateway is the heart of the ServersCheck environmental sensors. This base unit is where all the smart logic resides: from connection to monitoring, reporting and alerting.



The SensorGateway 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.

Note: If a power adapter (BASE-PWR) and POE is plugged into the gateway to supply power at the same time the gateway will automatically switch to the power adapter and use POE as backup, Also the gateway 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.

It is recommended to verify the calibration of the temperature probe in your environment and if an offset is noticed, to recalibrate the sensor as explained in section 10 of this document.

The maximum tested length between a PoE switch and the SensorGateway is 100ft or 30 meters. Actuals may vary depending on cable quality, switch and environmental factors.

1.3. Configuring the SensorGateway to the Network

The SensorGateway 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 not

Then the default IP address from factory of the SensorGateway is **192.168.11.160**

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

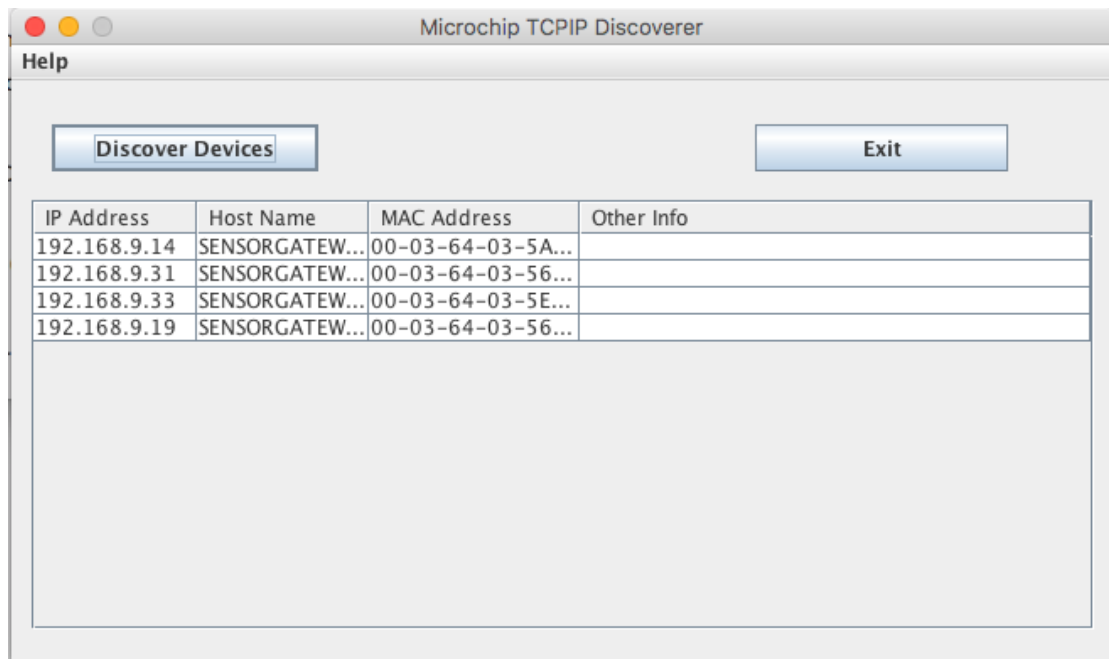
We highly recommend not using DHCP but instead to use fixed IP addresses.

Make sure the SensorGateway is plugged with a network cable into the network.

1.4. SensorGateway 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 sensorgateway connected within your network. All you have to do is run the software, which can be downloaded, from <https://serverscheck.com/support/downloads.asp>

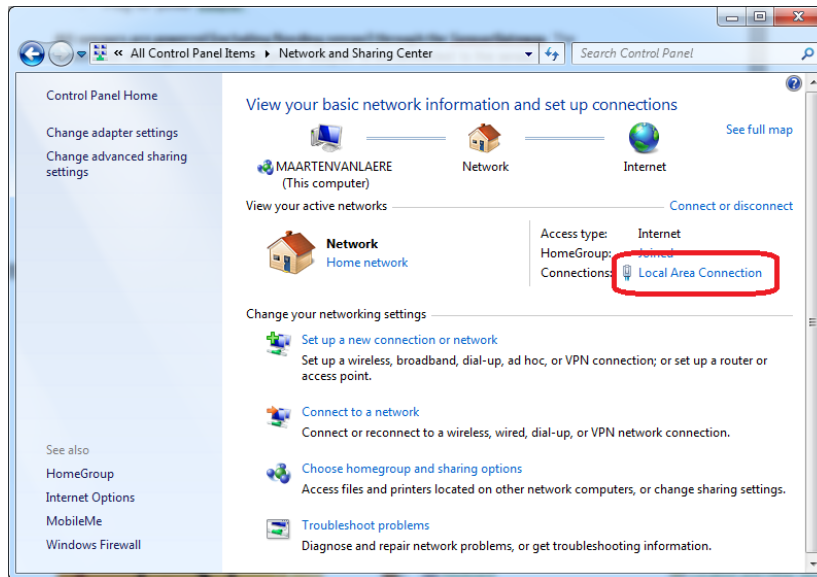
Works with Windows(Discoverer.exe) and Mac OS(Discoverer.jar).



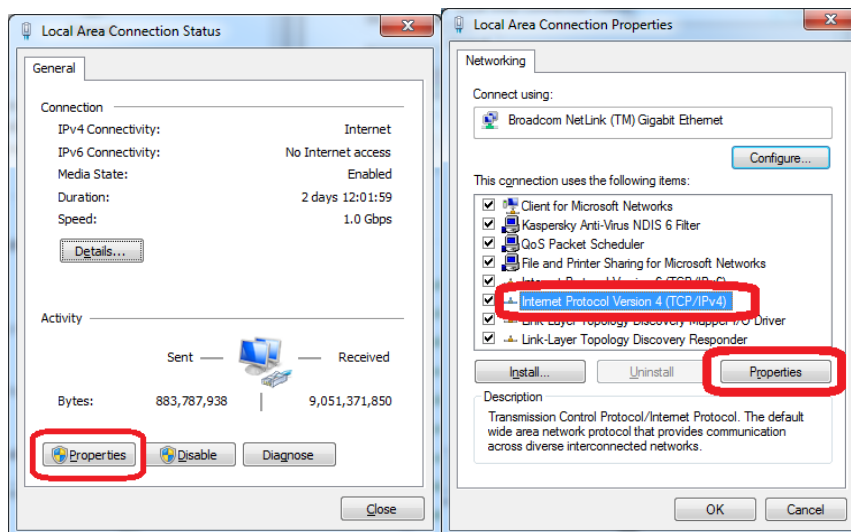
1.5. Set your PC in the same network segment as the SensorGateway

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**



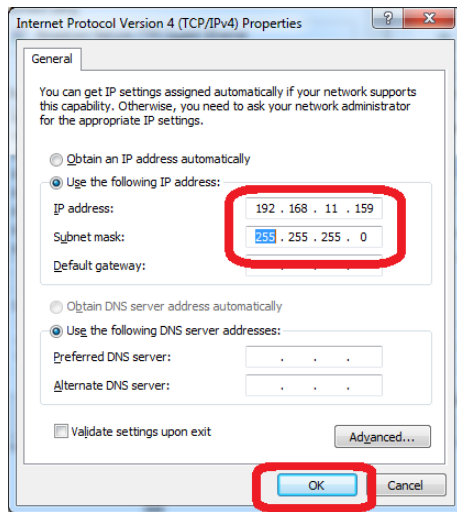
Click on **Local Area Connection** and then click on **Properties**. In the new window select **Internet Protocol Version 4** and click on the **Properties** button.



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.

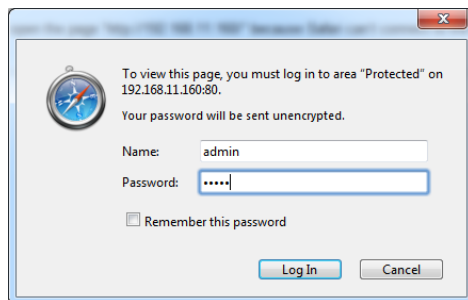
You can now plug your gateway directly to your PC



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

1.6. Connecting to the SensorGateway via the Default IP

Once you have completed Section 1.4, Open your browser and surf to <http://192.168.11.160> A connection will be made to the web server on board of the SensorGateway 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 SensorGateway with the first sensor reading being the built-in temperature probe.

In the main window, click on the **Wired Network Settings** option in the right hand side menu

Wired Network Setting

Setting: DHCP Fixed

IP Address:

Subnet Mask :

Gateway :

Primary DNS :


Secondary DNS :

Net BIOS Name :

Mac Address (HEX) : 00:03:64:03:44:40

You can now change the SensorGateway'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>

 the infrastructure monitoring company

Wired Network Setting

Setting: DHCP Fixed

IP Address:

Subnet Mask :

Gateway :

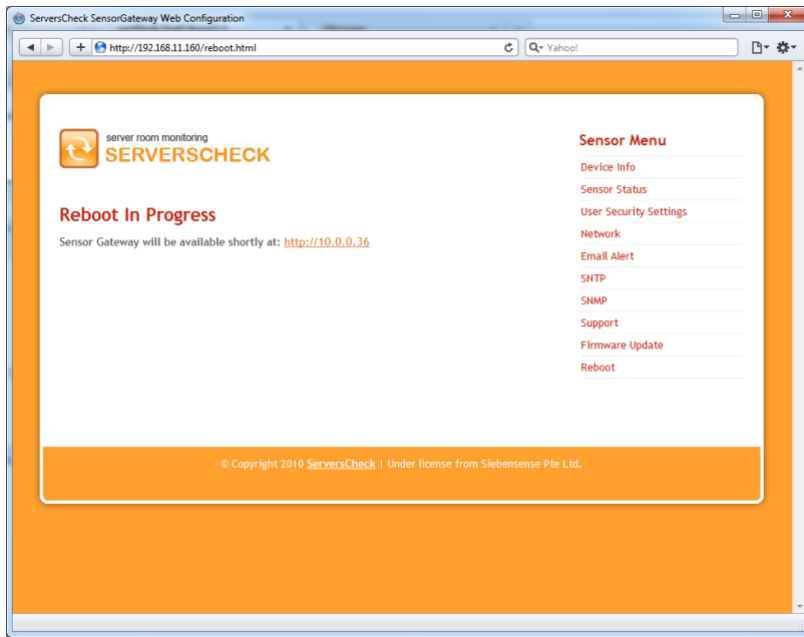
Primary DNS :

Secondary DNS :

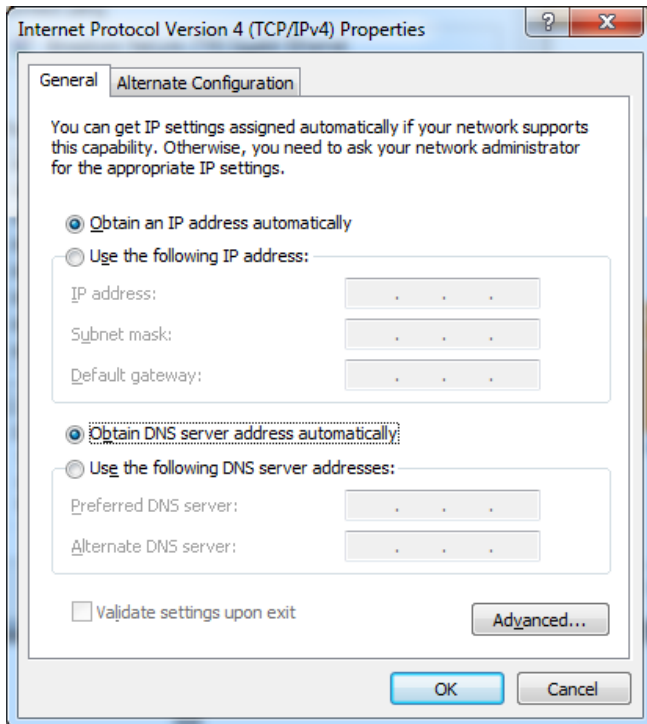
Net BIOS Name :

Mac Address (HEX) : 00:03:64:03:28:08

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



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



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

The screenshot shows a web browser window titled "ServersCheck SensorGateway Web Configuration" with the address bar displaying "http://10.0.0.36/sensor_status.html". The page features the ServersCheck logo and a "Sensor Status" section with a table of sensor data. A "Sensor Menu" is visible on the right side of the page.

Sensor Status

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SNMP Trap	Del
✓	InternalTemp	Temp.	Undefined1	27.13 °C	< 18.00 ~ > 37.00	< 15.00 ~ > 41.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✗

Buttons:

Sensor Menu

- Device Info
- Sensor Status
- User Security Settings
- Network
- Email Alert
- SNTP
- SNMP
- Support
- Firmware Update
- Reboot

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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.

1.7. Int. Ping

Once you have updated to firmware 7.40 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-WIRED).

1.7.1. How to set it up

1. Access your gateway and click on the “**PING**” option.
2. Make sure “Enable Ping” has a check mark
3. Input the URL / IP address you wanted you check.



Ping Setting

Enable Ping :

URL/IP address :

Sensor Menu

- Device Info
- Sensor Status
- Alert History
- Cloud
- Ping**
- User Security Settings
- Wired Network Settings
- Email Alert
- SMS & Voice Call Alert
- ModBus
- SNTP
- SNMP
- Support
- Sensor Calibration
- Firmware Update
- Reboot

1.8. External Sensor Probes



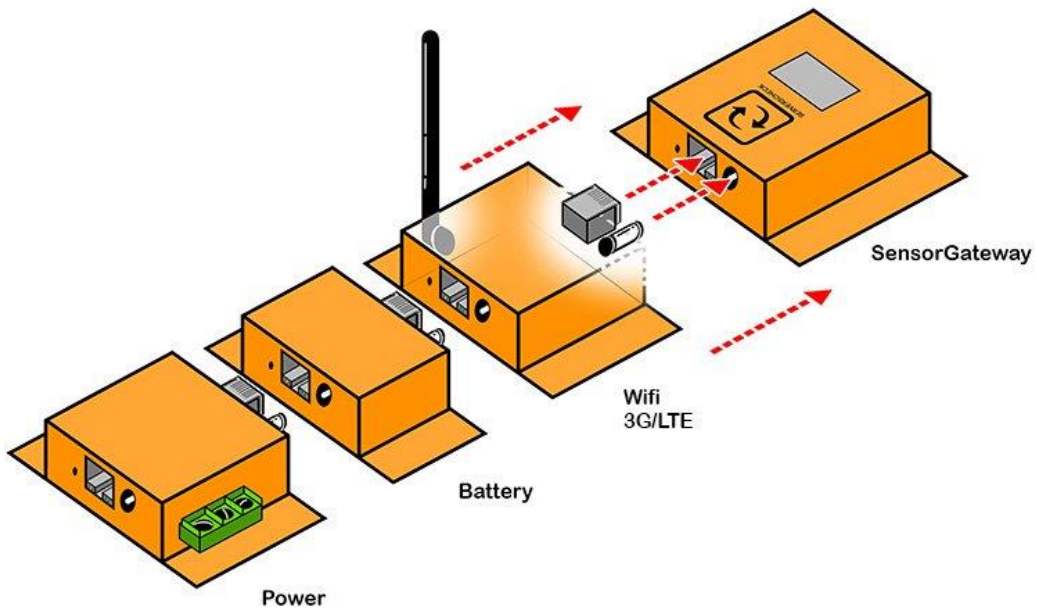
ServersCheck uses external sensor probes for its environmental monitoring solution.

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 SensorGateway and an external probe.

1.9. Add-Ons for the Base Unit

The Sensorgateway, 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.



1.9.1. Wireless Add-On

The ServersCheck Add on Wifi module is an expansion unit to the Sensorgateway 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



1.9.2. Features

- Portable design
- Connects directly to the Sensorgateway
- Directly powers the Sensorgateway 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 Sensorgateway
- Add an Access Point mode that creates a wireless network for Wi-Fi devices to access and configure the Sensorgateway
- Add a client mode functionality that works as a wireless adapter for any Ethernet enabled devices to access and configure the Sensorgateway
- Add an 3G and LTE USB data connection to your network when there is no ISP available

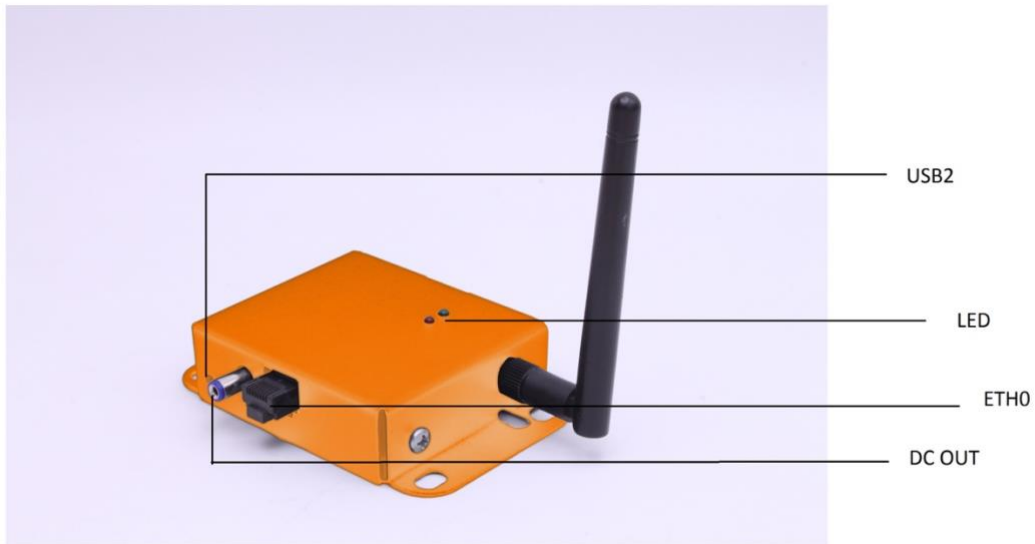
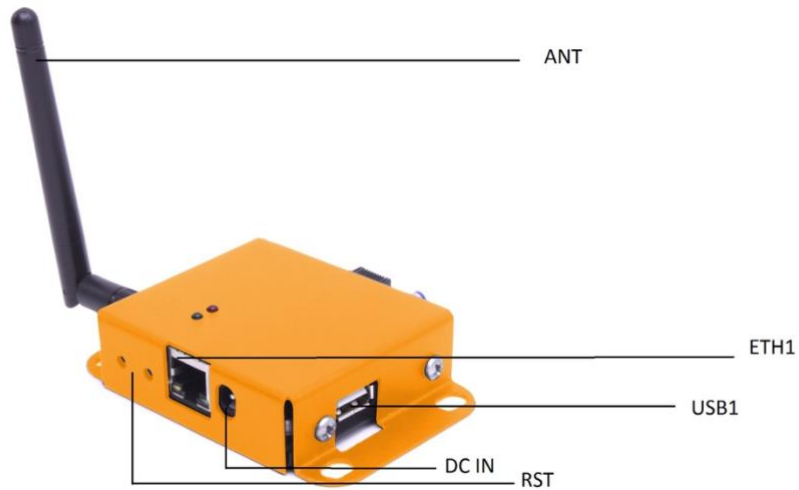
1.9.3. Specifications

- Plugs into Sensorgateway, BASE-WIRED
- Wifi 802.11 b/g/n at 2.4 Mhz
- Optional LTE via Huawei or ZTE USB modem (Huawei E3272 modem is recommended.)
- 12v DC powered (power adapter included)
- Works with Sensorgateways v1,2,3,4,5 or 5.1
- Made in Europe
- FCC, CE certified
- Processor: AR9331, 400 MHZ clock speed
- Operating System: openwrt Serverscheck distro
- Ram: 64 MB DDR2 RAM
- Storage Capability: 16 MB FLASH
- One USB 2.0 port for LTE dongle
- One micro USB port for diagnostics

1.9.4. View of the Wireless Add On Connected to the Gateway



1.9.5. Hardware Interface

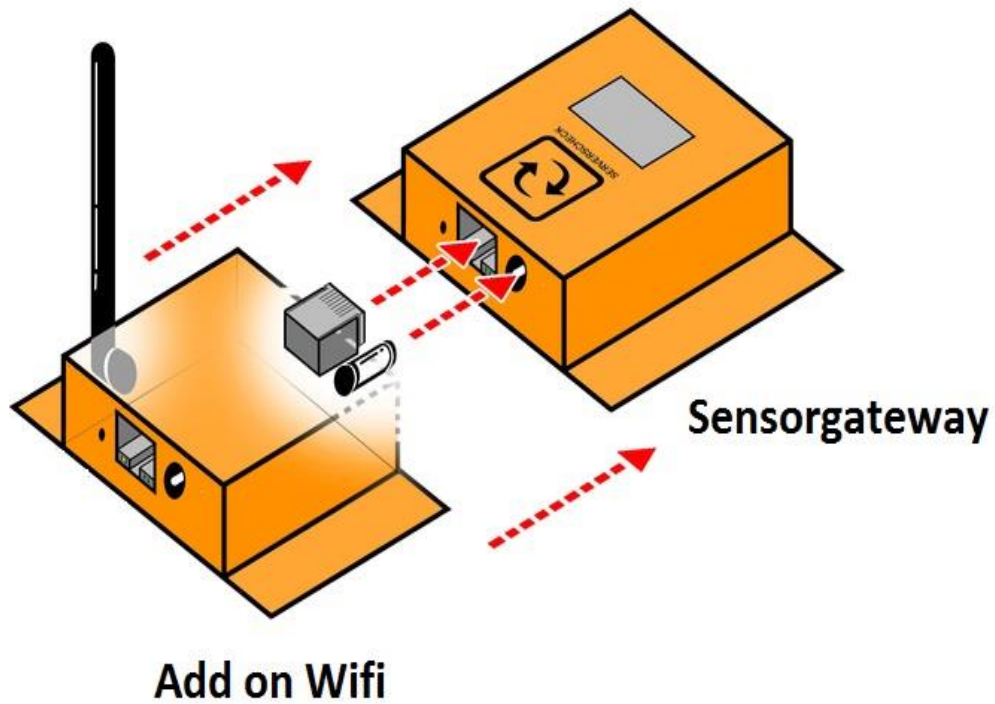


Interface	Description
ANT	Wireless antenna
LED	LED indicators Solid RED = power ON Blinking Red = connected to WLAN
RST	Power Reset Button (Right button) No Function Reserve(Left button)
ETH1	WAN/LAN port
ETH0	LAN port to Sensorgateway
DC IN	12 volt DC adapter socket
DC OUT	12 volt DC out to Sensorgateway
USB1	USB for 3G and LTE dongle
USB2	USB for diagnostics

1.9.6. Getting Started

Powering the Add on Wifi module with Sensorgateway

1. Connect the 12 volt DC adapter to the DC IN socket
2. Wait for the RED LED to turn solid
3. Connect the Sensorgateway 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

1.9.7. 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

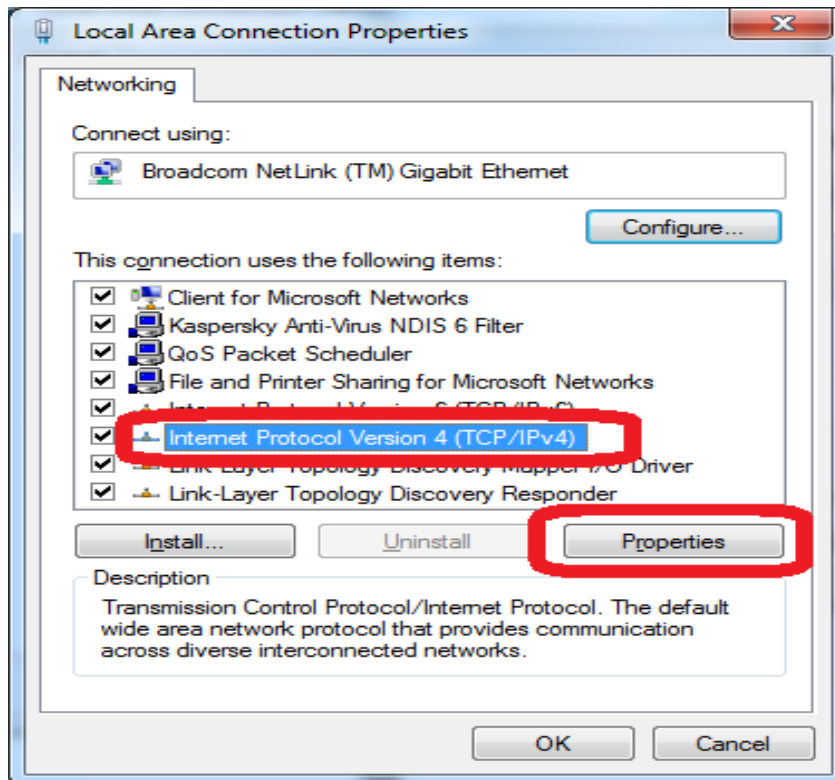
As an Access point (WLAN)

1. Power on the Add on Wifi module
2. Connect via Wifi to the unsecured SSID "ServersCheck"
3. Launch a web browser and type the default IP 192.168.1.1 to the address bar
4. By default there is no password that has been set
5. Username must always be "root"
6. Click LOGIN to access main menu page
7. Sensorgateway GUI will be available from the IP address on the OLED screen
8. Make sure that the Add on Wifi module and Sensorgateway has the correct IP range
9. Setting the Sensorgateway to DHCP is recommended

LAN connection to PC (LAN)

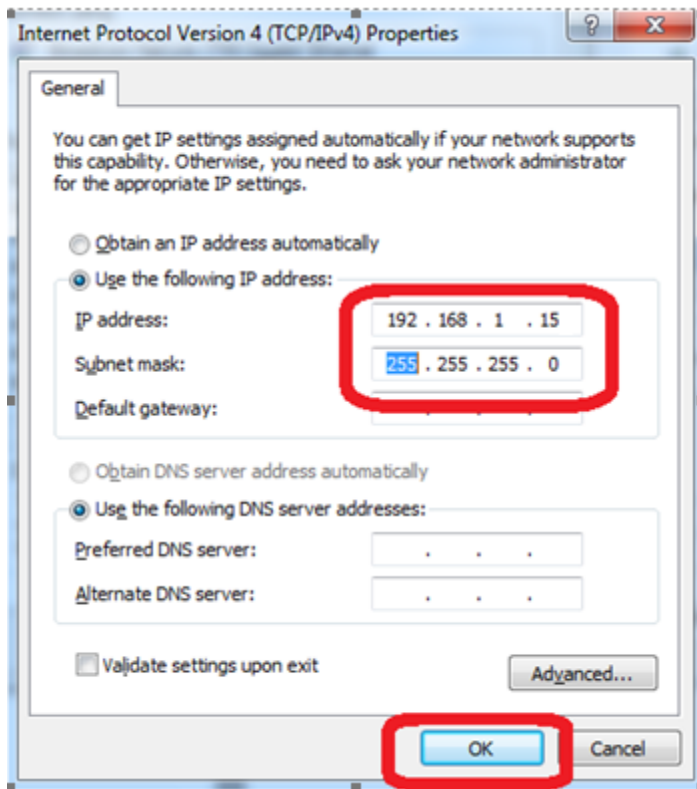
The steps below apply to a Windows 7 system. For other systems (Windows, Mac, *Nix) steps are similar

1. Power on the Add on Wifi module
2. Connect ETH1 to the LAN port of your PC
3. Go to **Network Panel > Network & Sharing Center**
4. 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.

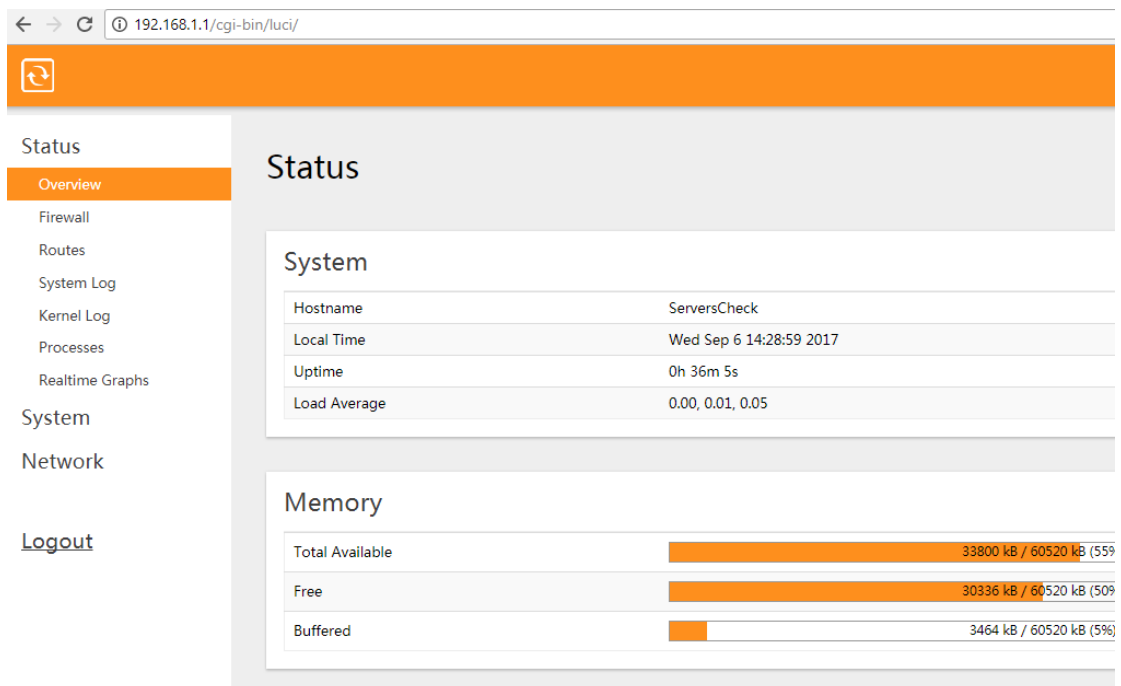


5. Set the corresponding IP ranges

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



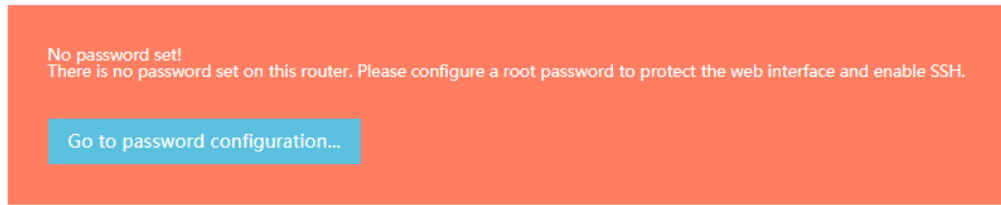
- Launch a web browser and type the default IP 192.168.1.1 to the address bar
- By default there is no password that has been set
- Username must always be "root"
- Click LOGIN to access main menu page



- Sensorgateway GUI will be available from the IP address on the OLED screen
- Make sure that the Add on Wifi module and Sensorgateway has the correct IP range
- Setting the Sensorgateway to DHCP is recommended

1.9.8. Username and Password Settings

1. Access the GUI
2. By default there is no password that has been set
3. Username must always be "root"
4. Click LOGIN to access main menu page

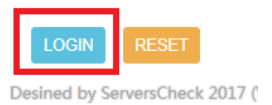


Authorization Required

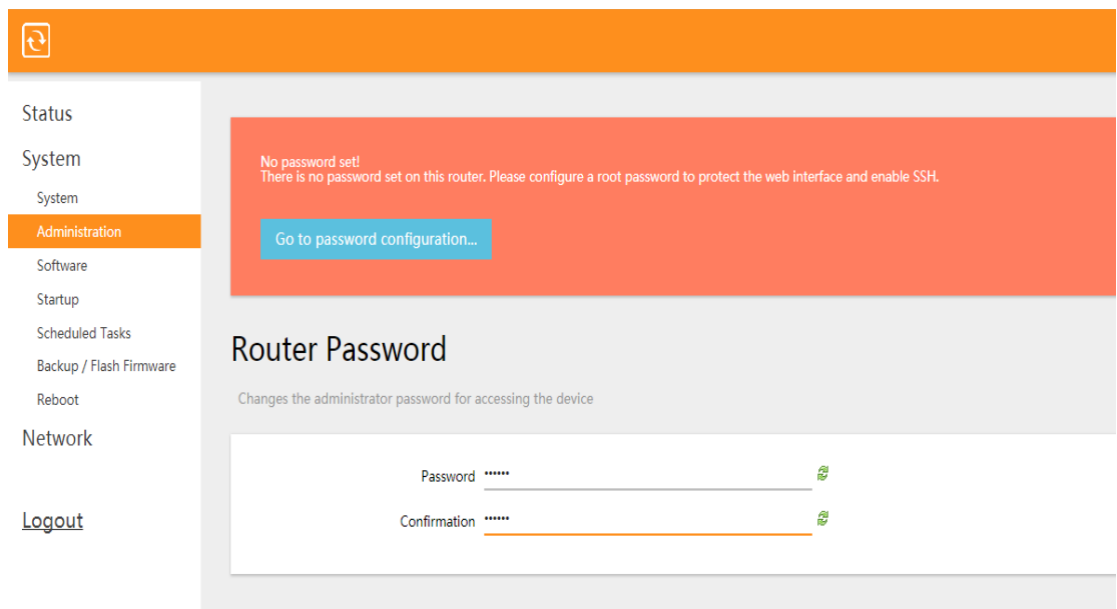
Please enter your username and password.

Username

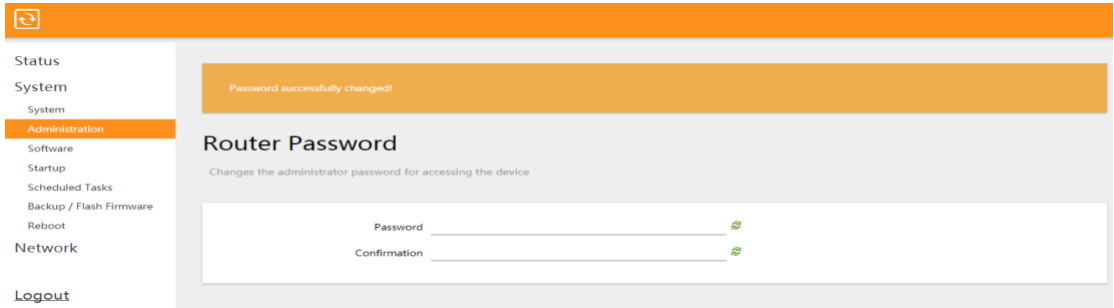
Password



5. Go to System > Administration
6. Set and confirm password
7. Click SAVE and APPLY



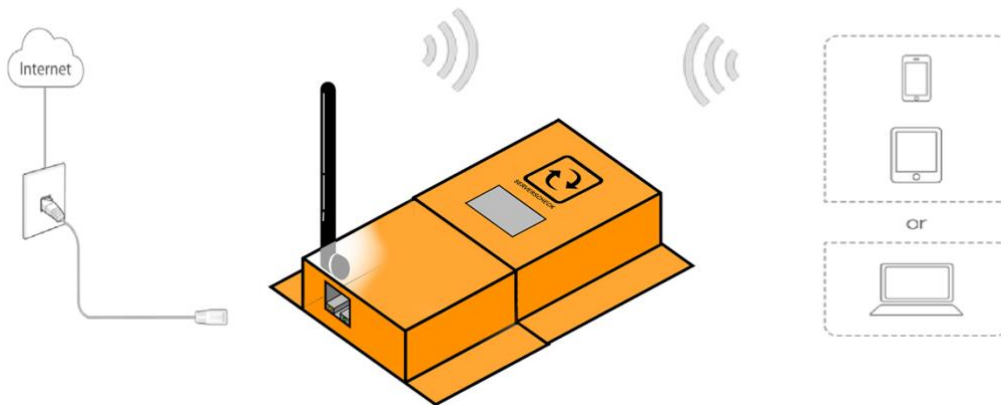
- There will be a notification that the password was successfully set



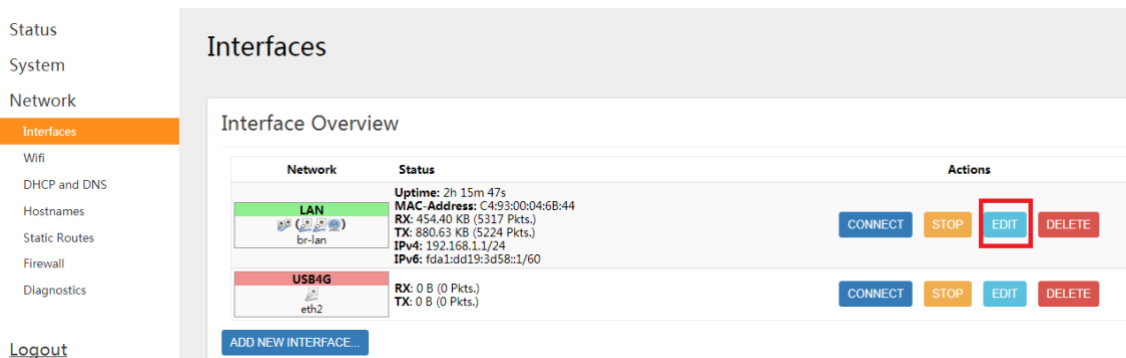
1.9.9. Configuration Modes

Adding Internet connection to the Sensorgateway via ETH0 can be done with the following modes

1.9.9.1. Wireless Router



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



4. 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:

5. Click SAVE and APPLY
6. Go to Network > Interfaces
7. 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...

- Name the new interface and select Ethernet adapter : eth1 (lan)

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 t

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: _____

- Choose between DHCP Client or Static protocol
- Click SUBMIT
- On the Firewall setting Tab chose WAN

Interfaces - ETH1

On this page you can configure the network interfaces. You can bridge several interfaces by tickin 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**

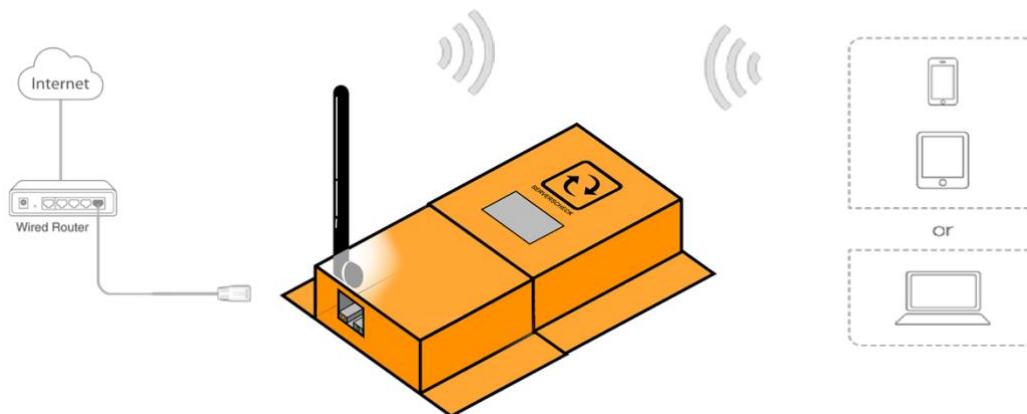
Create / Assign firewall-zone

- lan:
- wan:
- unspecified -or- create: _____

Choose the firewall zone you want to assign to this

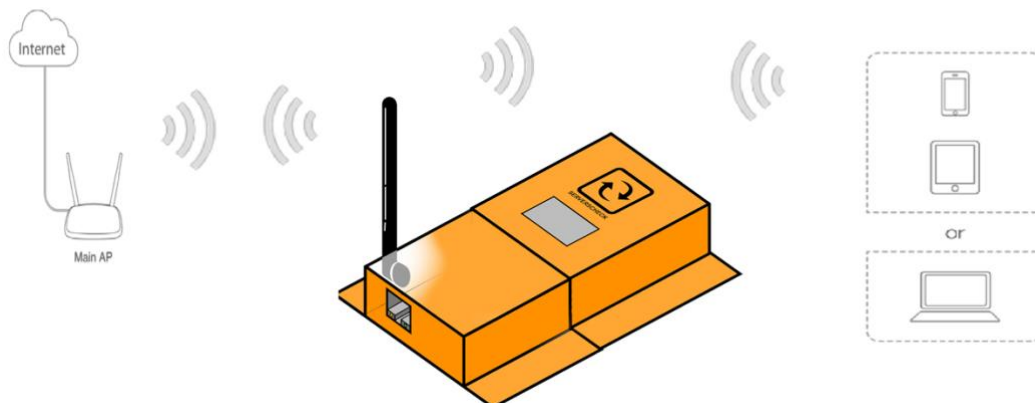
- Click SAVE and APPLY
- Connect ETH1 to WAN port
- Internet connection will be available on ETH0

1.9.10. Access point

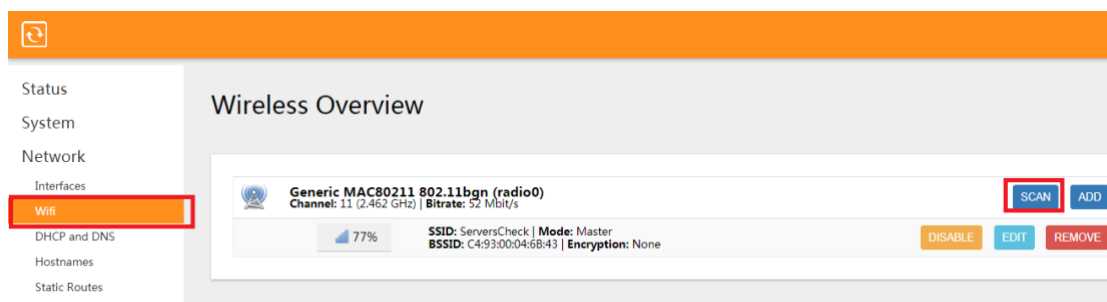


1. Do steps 1 to 12 from Wireless Router configuration (section 1.5.8.1)
2. Connect ETH1 to any of the LAN port of the Router
3. Internet connection will be available on ETH0

1.9.11. Client



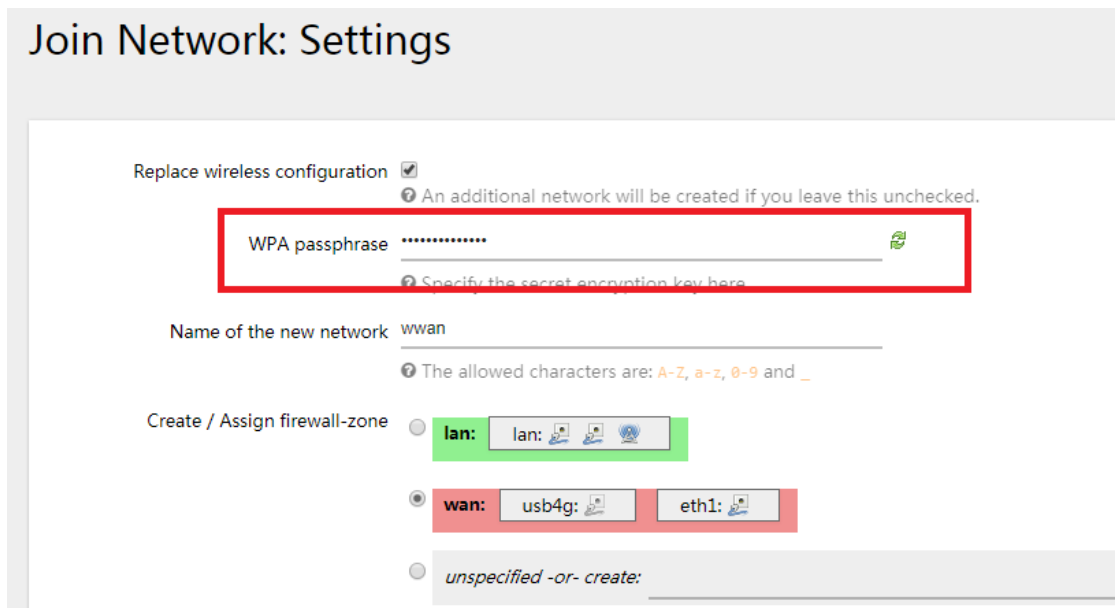
1. Access the GUI using WLAN or LAN
2. Go to Network > Wifi
3. Do a SCAN for available Wireless networks



4. Join the desired Wifi network



5. Type the password for the Wifi network



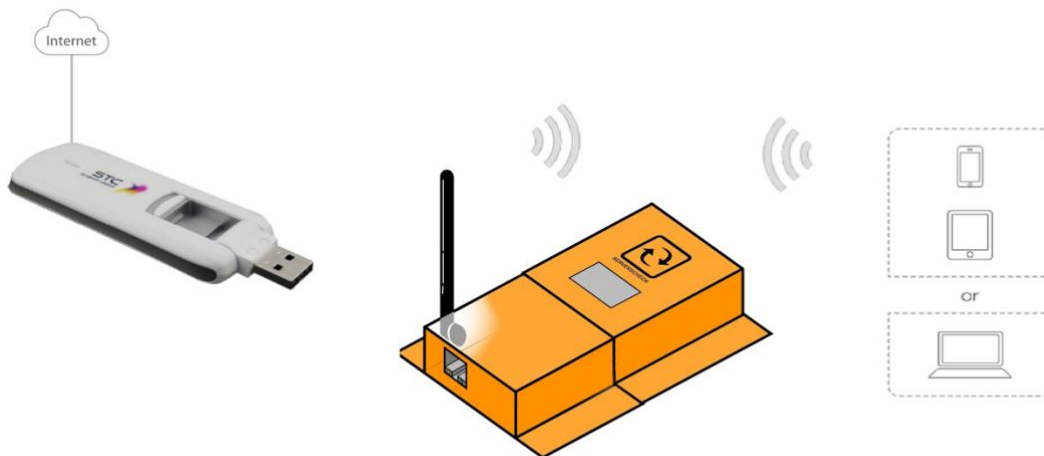
6. Click SUBMIT
7. Internet connection will be available on ETH0

1.9.12. Wireless Add-On with USB Modem

If your network is down or you are monitoring from a remote area, using an optional USB GSM modem, the add-on will connect to the mobile phone network to send out alerts or even sensor data. Note that the Huawei E3272 modem is recommended.





1.9.12.1. Configuration



1. Access the GUI using WLAN or LAN
2. Connect 3G USB Dongle to USB1 port
3. Go to Network > interfaces
4. 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...

5. Name the new interface and select Ethernet adapter : usb0 (USBdongle)

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 automatic protocol/b

Protocol of the new interface

Create a bridge over multiple interfaces

Cover the following interface

- Ethernet Adapter: "eth0" (lan)
- Ethernet Adapter: "eth1" (lan)
- Ethernet Adapter: "usb0" (USBdongle)
- Wireless Network: Master "ServersCheck" (lan)
- Custom Interface: _____

6. Choose between DHCP Client or Static protocol
7. Click SUBMIT
8. On the Firewall setting Tab chose WAN




Interfaces - USBDONGLE


On this page you can configure the network interfaces. You can bridge several interfaces by ticking the 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: USBdongle: 

unspecified -or- create: _____

 Choose the firewall zone you want to assign to this interface

9. Click **SAVE** and **APPLY**
10. Internet connection will be available on **ETH0**

2. Connecting the ServersCheck Sensor Probes

2.1. 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 SensorGateway using the RJ45 connector labeled **Serial**(for SensorGateway v1, v2 & v3) SensorGateway 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 SensorGateway 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.

3. Environmental Sensors

3.1. View of Temperature Sensor




3.2. View of Temperature&Humidity Sensor



- 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

3.3. View of Flooding Sensor (Monitors an Area)



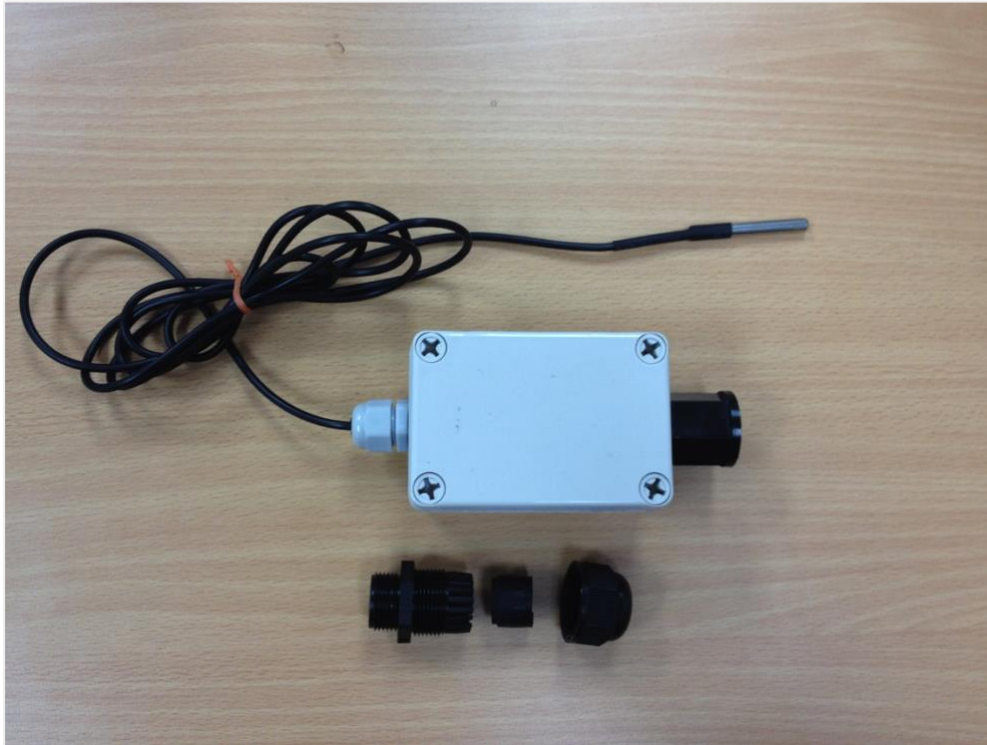
	<p>IMPORTANT NOTICE FOR WATER / FLOODING SENSORS</p> <p>The flooding / water detection sensor consists of 2 parts: the sensor (gray box with ServersCheck label on it) and the yellow water sensing cable (shown left). Only the purple cable may be submerged – this is the water sensitive part of the sensors! The sensor probe (gray box) has to be kept at all times above the water level.</p>
--	---

3.4. View of Stainless Steel Temperature Probe

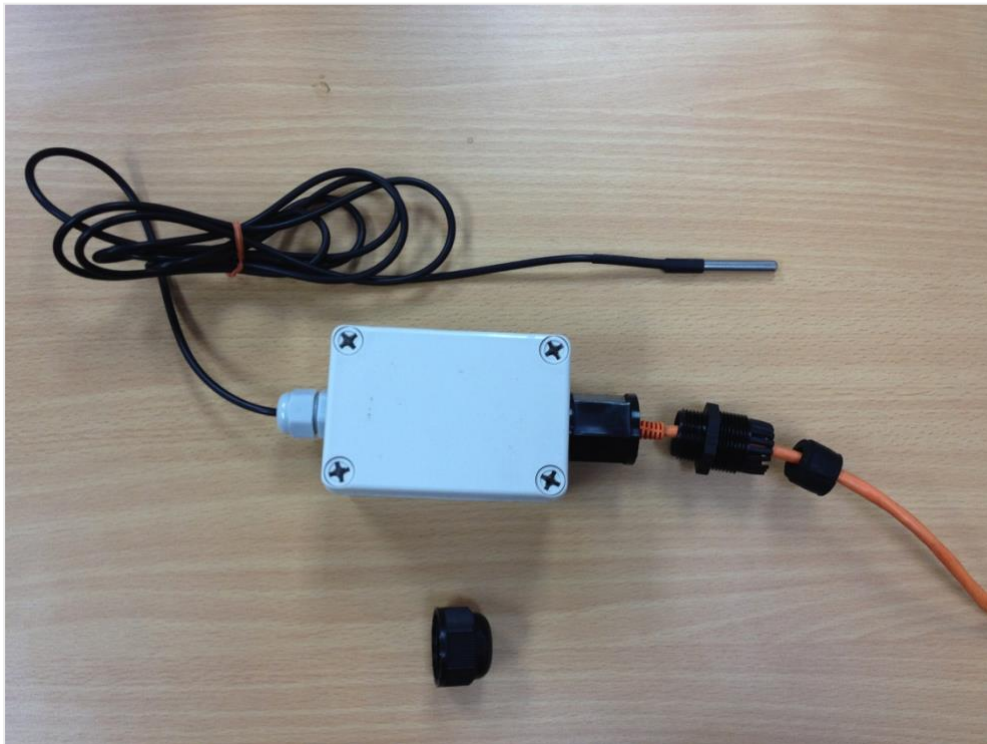


3.5. Stainless Steel Temperature Sensor & Flooding Sensor Assembly

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.



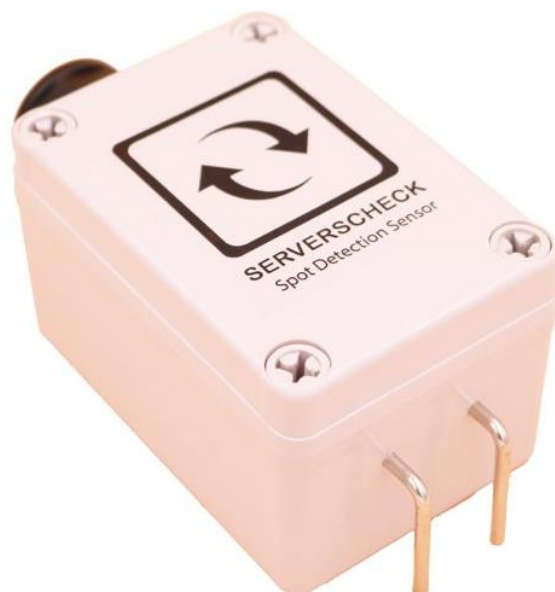
After that, connect them both on the RJ 45 connector of the sensor.



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.



3.6. View of Spot Detection Sensor (monitors a specific spot)



3.7. View of the Airflow Sensor



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:



Since 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.

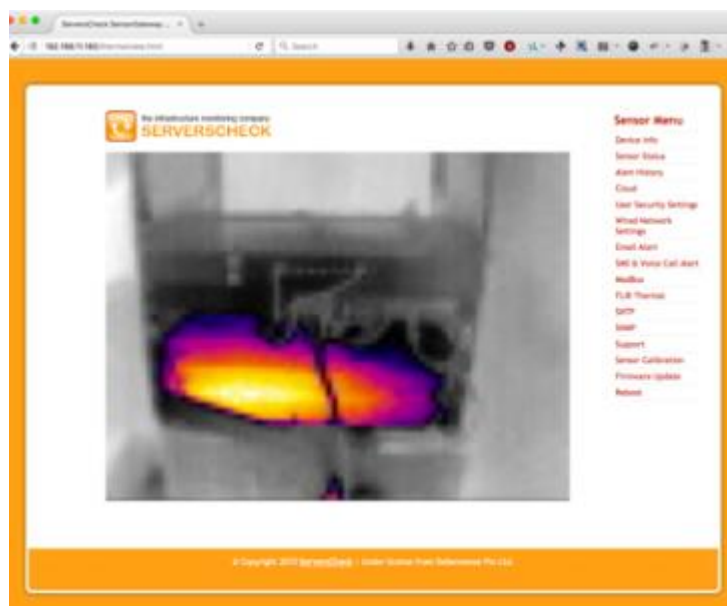
3.8. Thermal Imaging Sensor

The world's first SNMP & Modbus temperature monitoring sensor that tells you what it actually sees. 4800 temperature measurement points in one image, analyzed every 2 seconds.



3.9. Installation

Once the thermal sensor is plugged in to your gateway you should see a tab on the gateway's GUI named "FLiR Thermal".



3.10. Specifications

Thermal sensitivity: <50 mK (0.050° C)
Temperature Accuracy: +/- 1°C from 0°C to +65°C / 32°F to 149°F
Field Of View (FOV): 50° horizontal - 63.5° vertical
Spectral range: Longwave infrared, 8 µm to 14 µm
Resolution: 80x60 pixels
Operability: >99% of non-defective pixels. Only single-pixel defects are allowed (no clusters)
Distance: Can detect IR heat from up to approximately 30m/90ft
Readings in Celsius or Fahrenheit
Certified Operating temperature range: -10°C to +65°C (14°F to +149°F) in PoE mode
Operating humidity range: < 90% rH (non-condensating)
Dimensions: 74 mm (2.9") x 66 mm (2.59") x 22 mm (0.8")
Housing: Orange metal case with status led
0U Rack mountable or Wall mountable

Restrictions

ONE thermal sensor per Sensorgateway with or without an Expansion Hub. Firmware version should be 7.2 onwards.

And would only work with sensor hubs release 2016 onwards. The unit should be plugged on ports 1-4 on either of the multisensory hub or the sensor hub.

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

4. Power Sensors

4.1. View of Power Failure Sensor

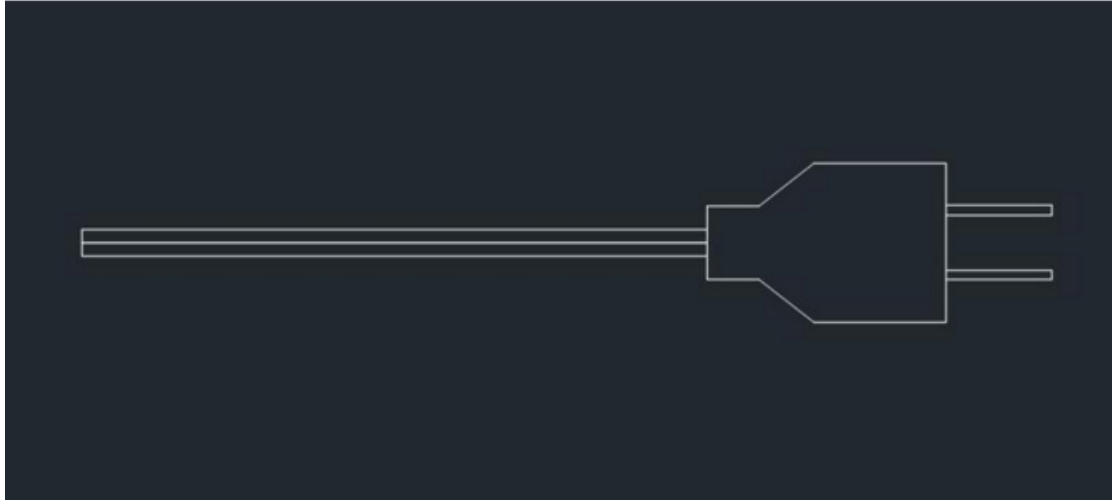


4.2. View of Current Sensor



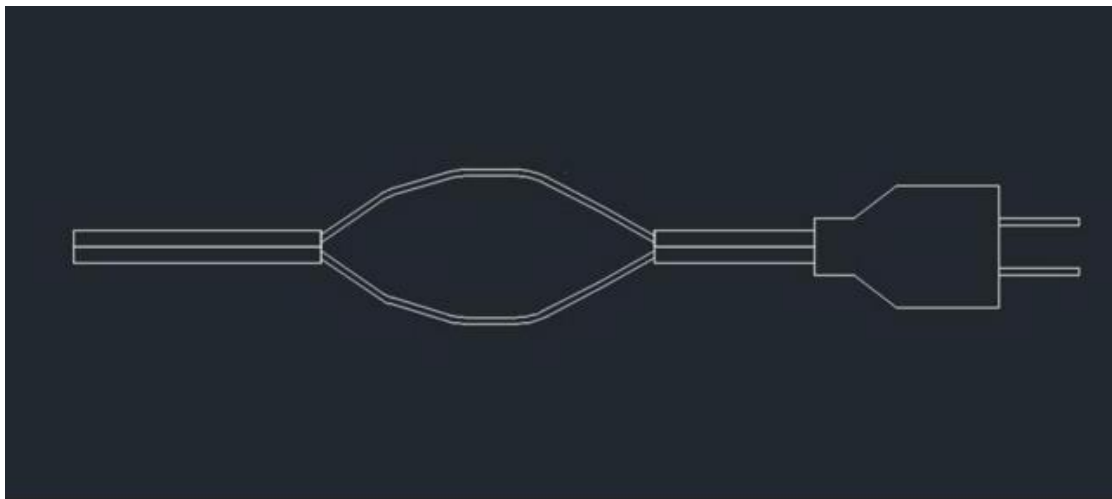
Connecting the Current Sensor

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

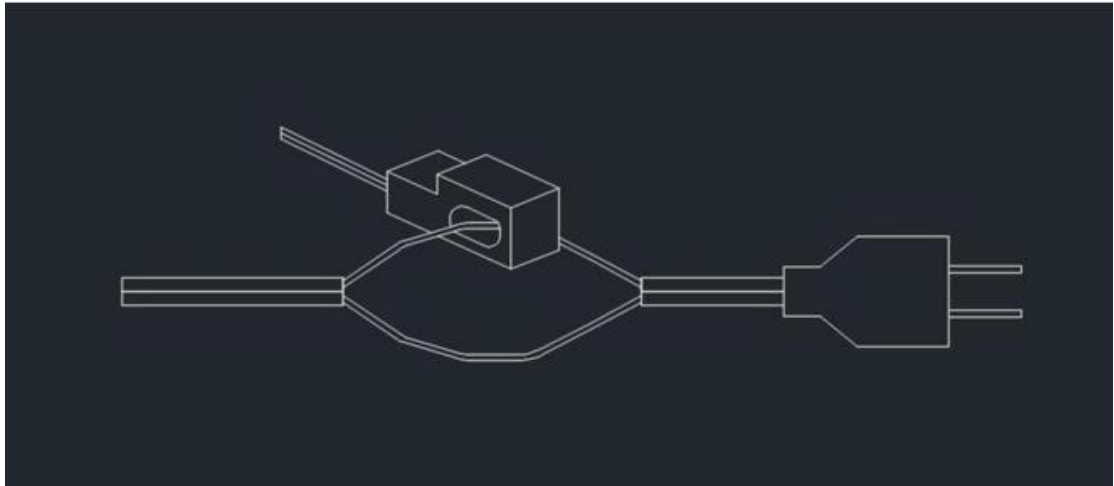


Example Plug going to the wall outlet

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.

4.3. View of DC Power Voltage Sensor

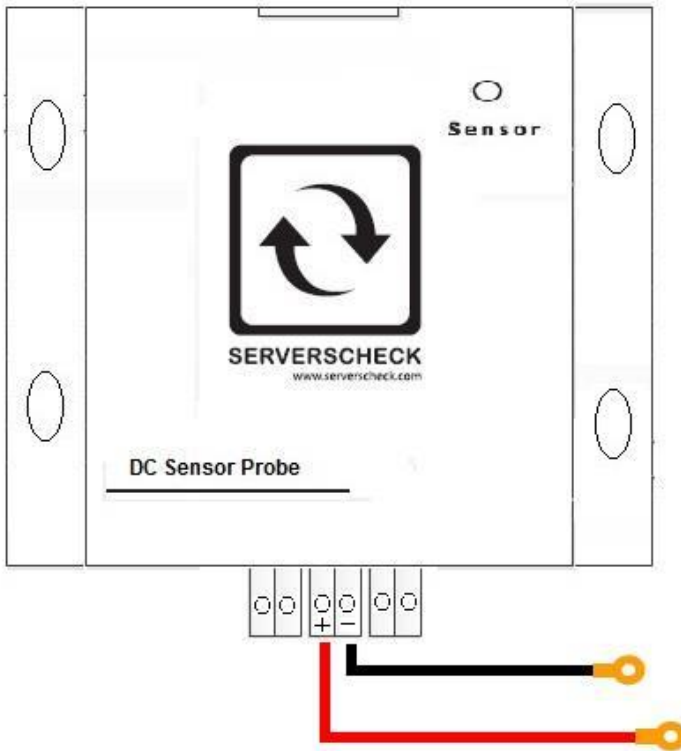


4.3.1. Power DC meter as a stand alone (PWR-DC-METER)

The DC sensor probe has a built in 12 volt power supply and a provision for current reading but it will require a transducer provided by Serverscheck (Explained in 4.3.2). For DC sensor probe operation, it only uses the middle two terminals labeled under "V".

The DC sensor probe is a Serverscheck probe that measures DC voltage from 0 to 56 volts. It is Suitable in measuring health and status of battery banks or any DC voltage target device.

4.3.2. Basic Wiring Diagram



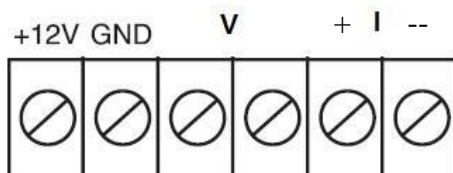
BLACK wire

connects to the negative (-) terminal

RED wire

connects to the (+) terminal

CONTACT TERMINALS



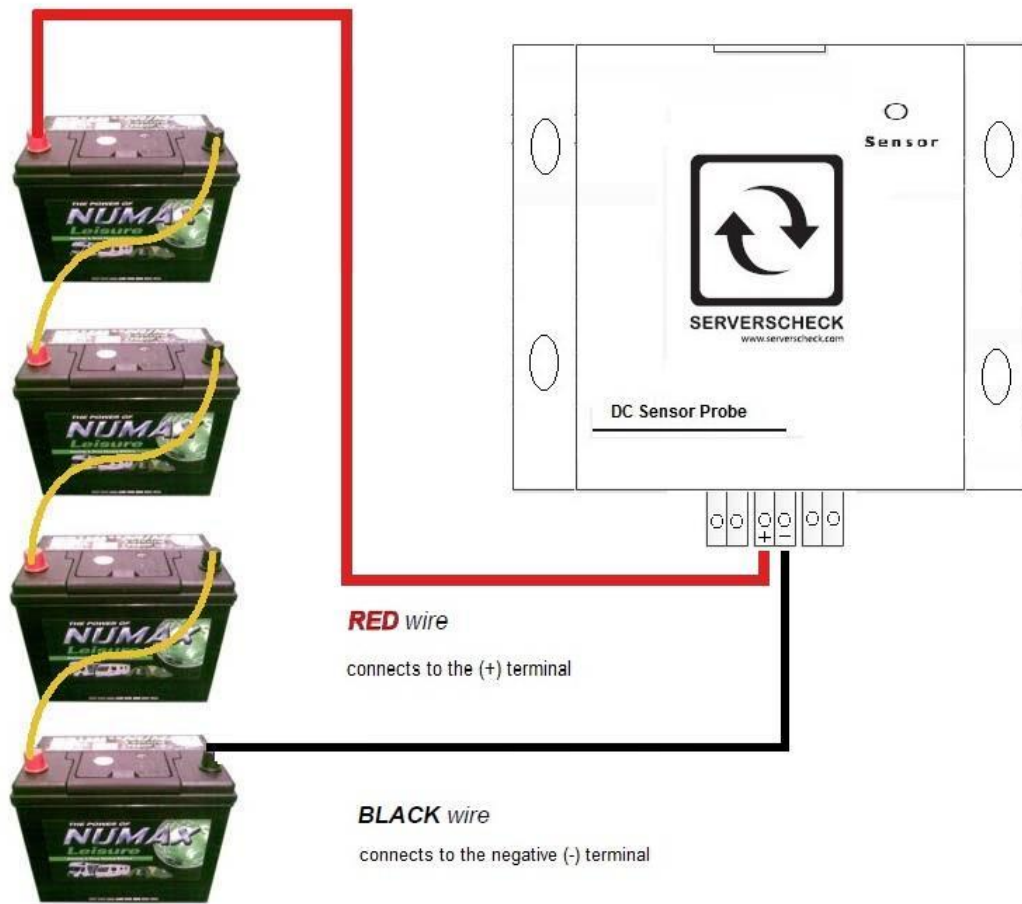
RED wire

connects to the (+) terminal

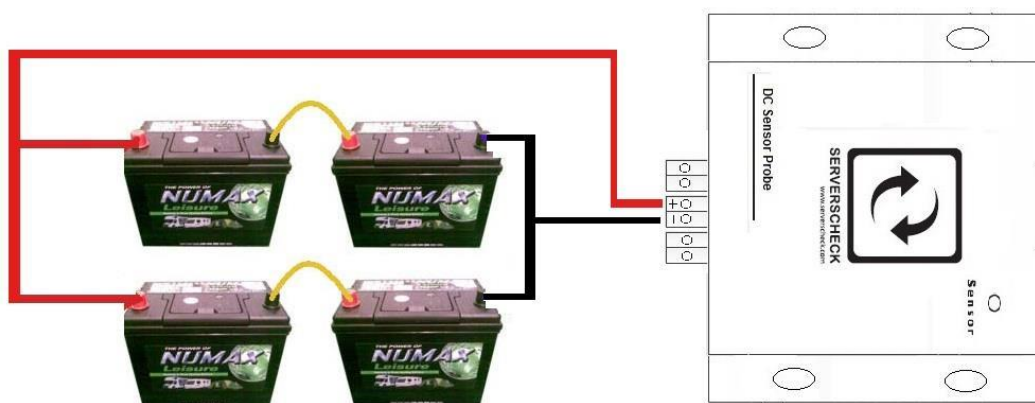
BLACK wire

connects to the negative (-) terminal

NOTE: +12V / GND will be used to supply power for the Transducer. As for the (+) terminal "I" will be used to poll the data from the transducer (-) terminal will not be used



Connection to Batteries in PARALLEL

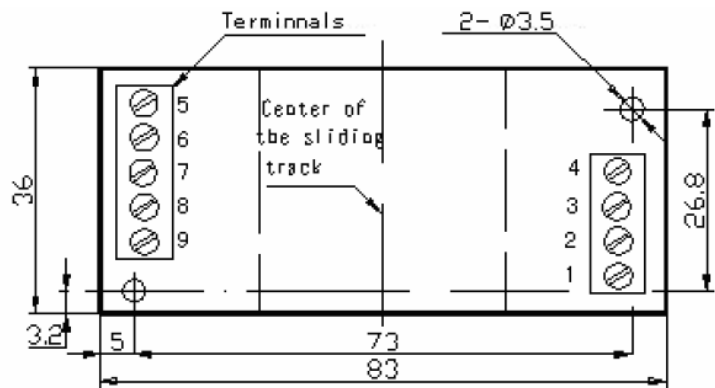


4.3.3. DC Power Current Sensor Probe (PWR-DC-METER) with DC Transducer (PWR-DC-TRANS) for Current and Power kWh monitoring

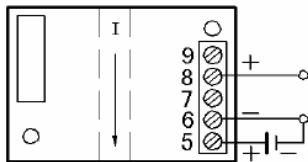
DC Transducer Terminals



83*36*100mm



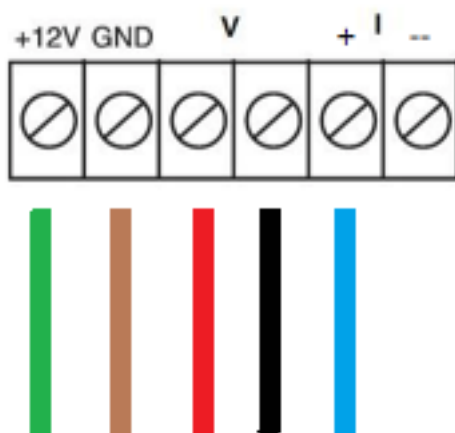
Connections Diagrams



Terminal 5: VCC, Positive power supply
 Terminal 6: GND, Negative power supply
 Terminal 8: Voltage output
 Don't use all terminals named NC.

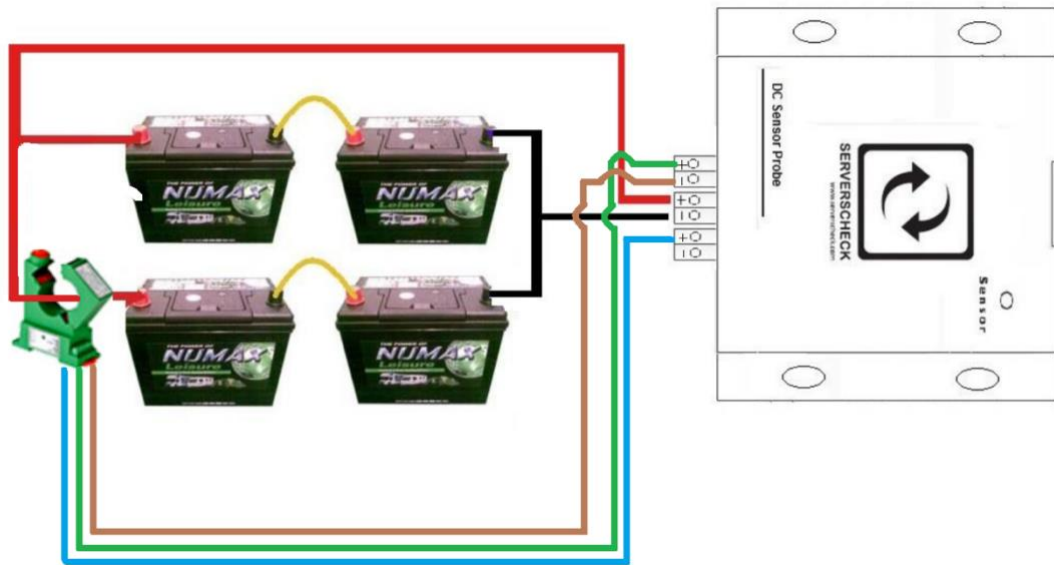
Connecting the DC Transducer to the Sensor Probe

SENSOR PROBE (PWR-DC-METER) CONTACT TERMINALS

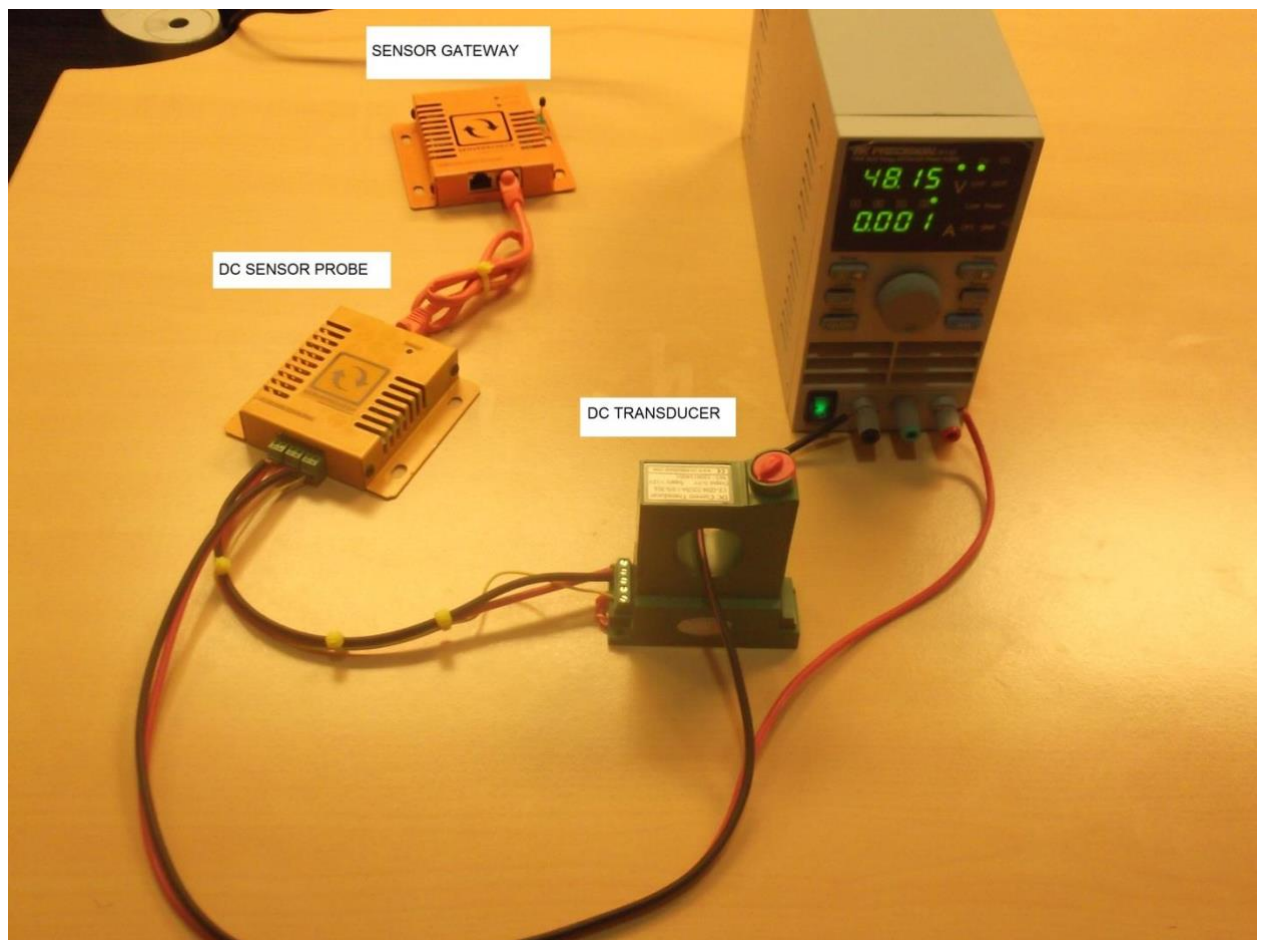


Black and Red – Connects to battery terminals
Green - Connects to Terminal 5 of transducer
Brown – Connects to Terminal 6 of transducer

On our earlier example we now place the transducer to be able to read the electric current



Here is an actual image of the Sensor, Monitoring the DC supply which acts as a battery / Rectifier



4.4. View of IP68 Ultrasonic Fuel Level Sensor



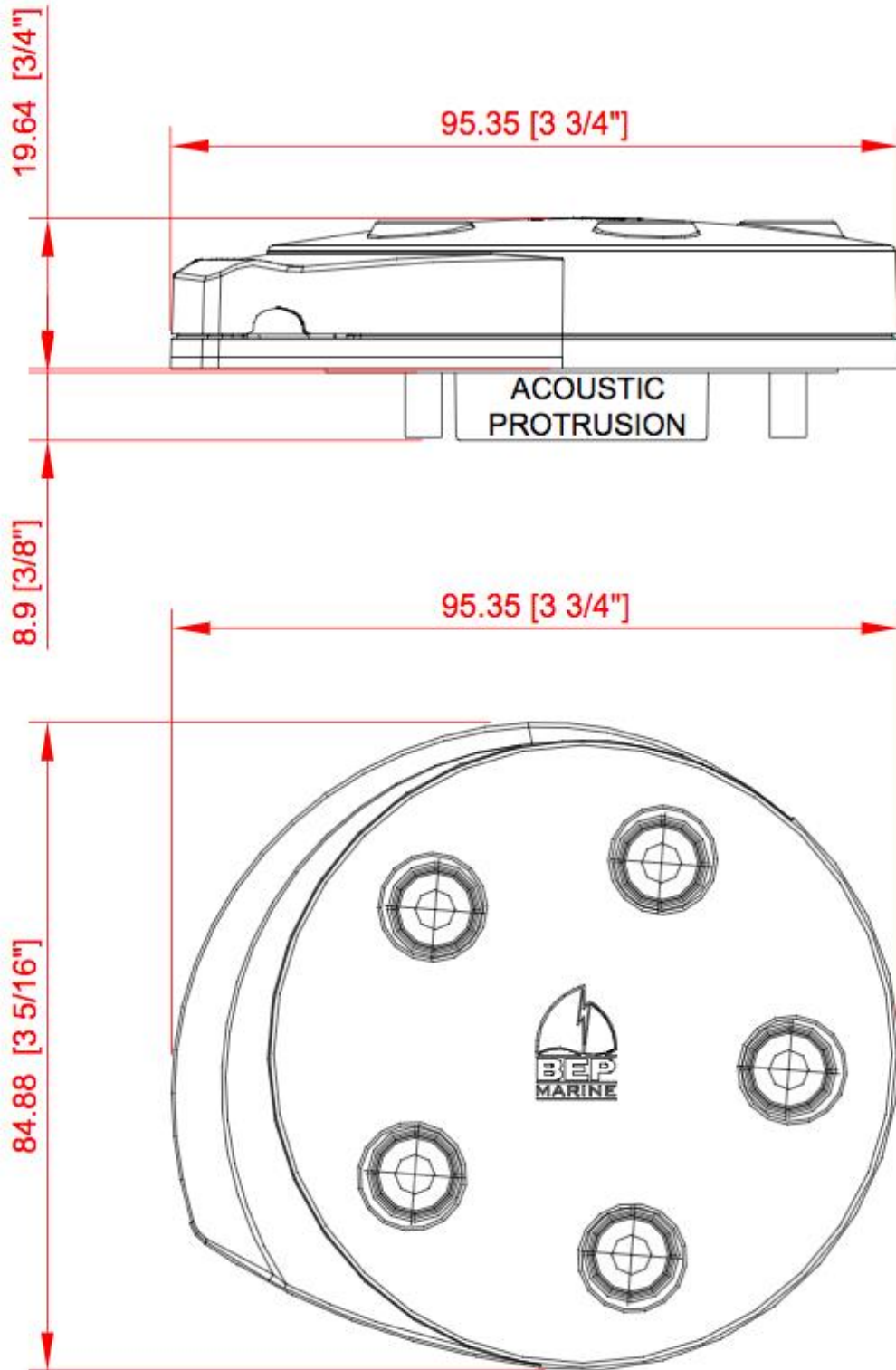
4.4.1. Features

- Plug & Play
- Contactless (ultrasonic) fuel level measurement
- Measures fuel level inside tanks with depths of up to 2m (6.5ft) with wall thickness of up to 6mm.
- 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 10088

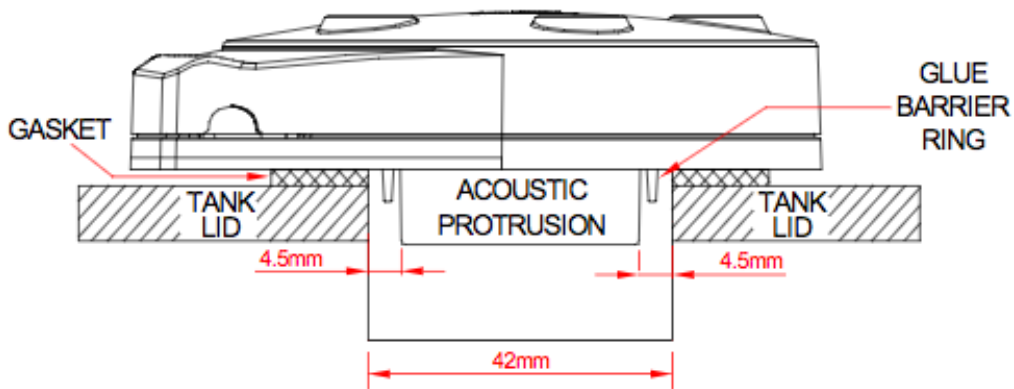
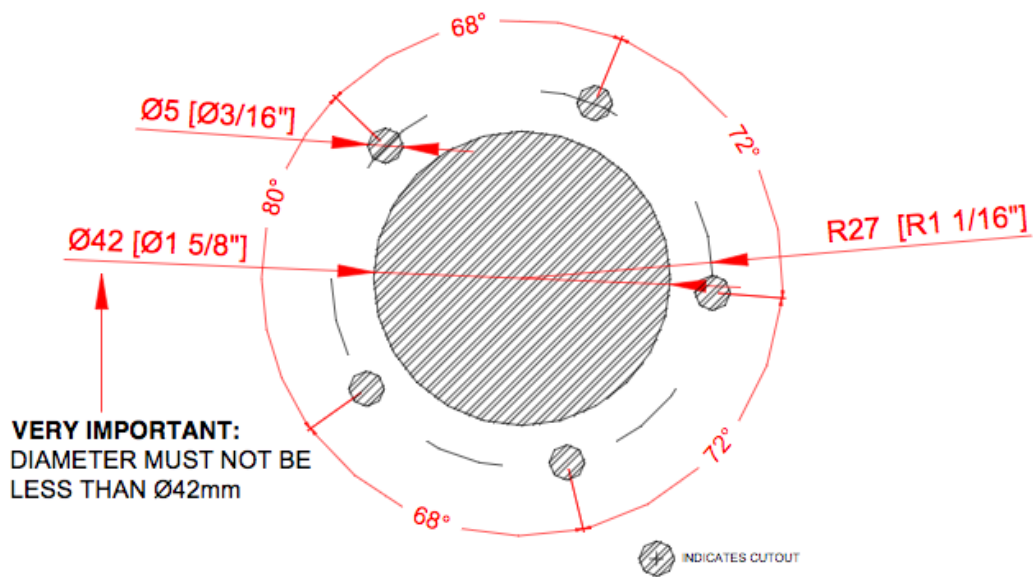
4.4.2. Technical Specifications

- Sensor Temperature Operating Range: 4°C to 65°C (39F to 148F)
- Measurement method: Acoustic sonic measurement
- Tank depth: 0-2000 mm (6.5 ft)
- Accuracy Distance: 0-2000 mm (6.5 ft) at 2 mm accuracy
- Mounting: SAE 5 stud mounting pattern with gasket, seal and screws (top mount only)
- Environmental temperature: 4-65 deg C
- Chemical resistance: Petrol, diesel
- Tank type style: Metal and plastic with non linear capacity
- Sensor Housing Dimensions: 65 mm (2.5") x 95 mm (3.74") x 55 mm (2.16")
- Sensor Housing Material: IP 65 plastic housing
- Sensor Housing Colour: light gray
- RJ45 cable Gland protection rating: IP 68
- Requires SensorGateway v5.1+ with firmware 7+
- Network communication protocols: SNMPv2,v3 XML, JSON, HTTP and Modbus TCP

4.4.3. Dimensions



4.4.4. Mounting and Installation



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

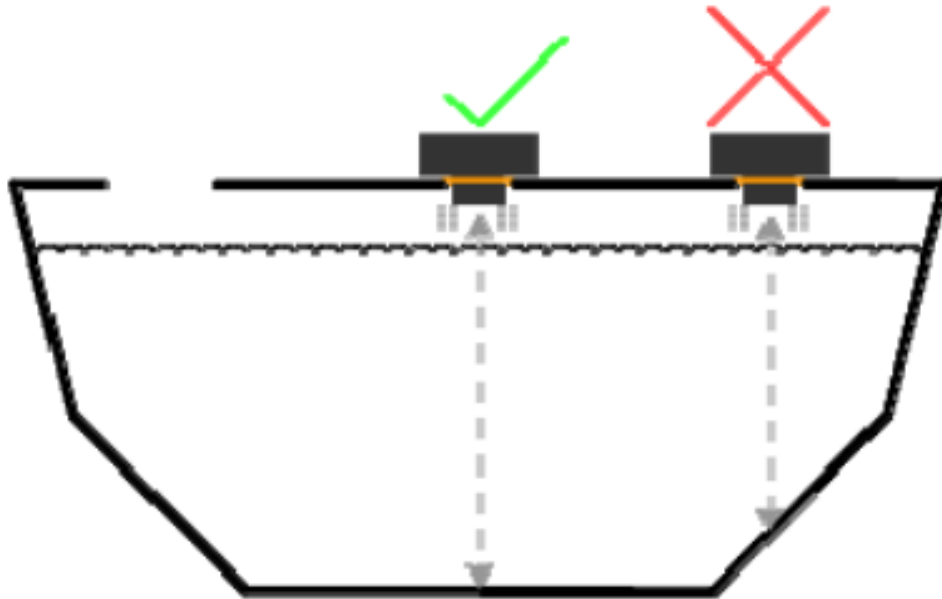
- The acoustic protrusion should be positioned in the tank aperture in the center of the hole. The protrusion should ideally be protruding into the tank and not be recessed in the hole. See drawing above.

- 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.

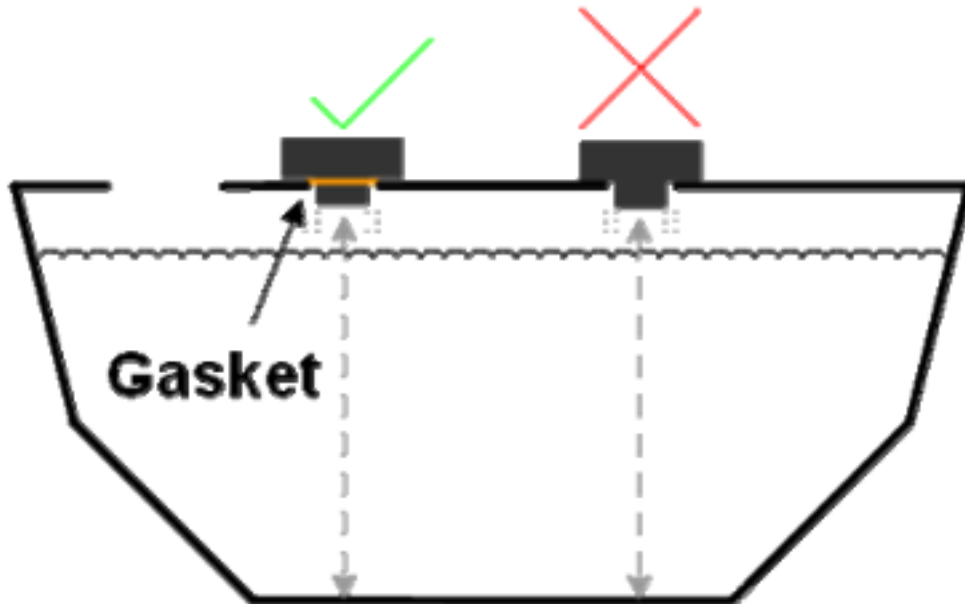
Note: Drawing is not to scale. Please use the tank gasket as a template and make sure the tank hole is 42mm.

4.4.5. Tips and Example Installations



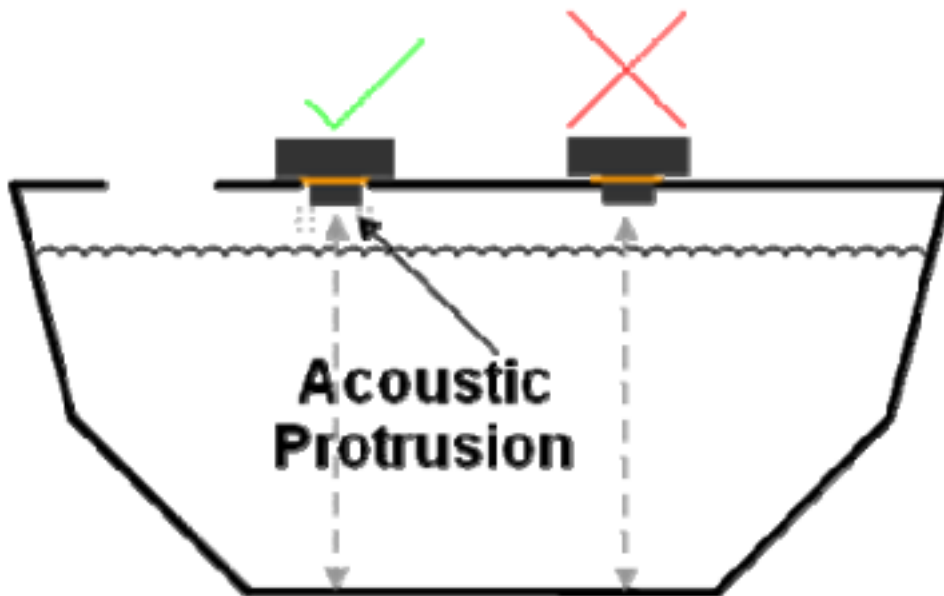
Unit must be mounted at the deepest tank point!

It is recommended that the unit is mounted in the middle of the tank, This allows the sensor to average waves of fluid to the correct level when the depth is varying.

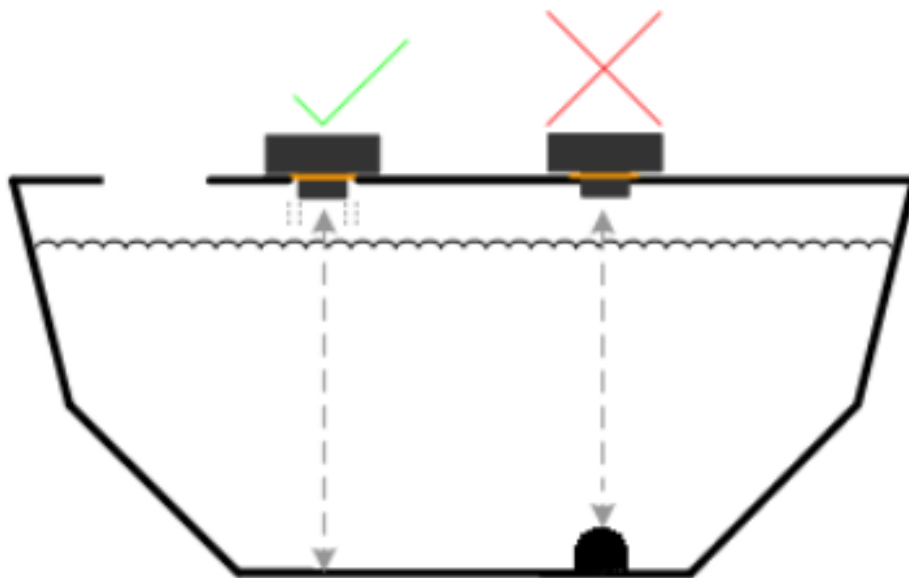


Correct BEP Gasket must be used!

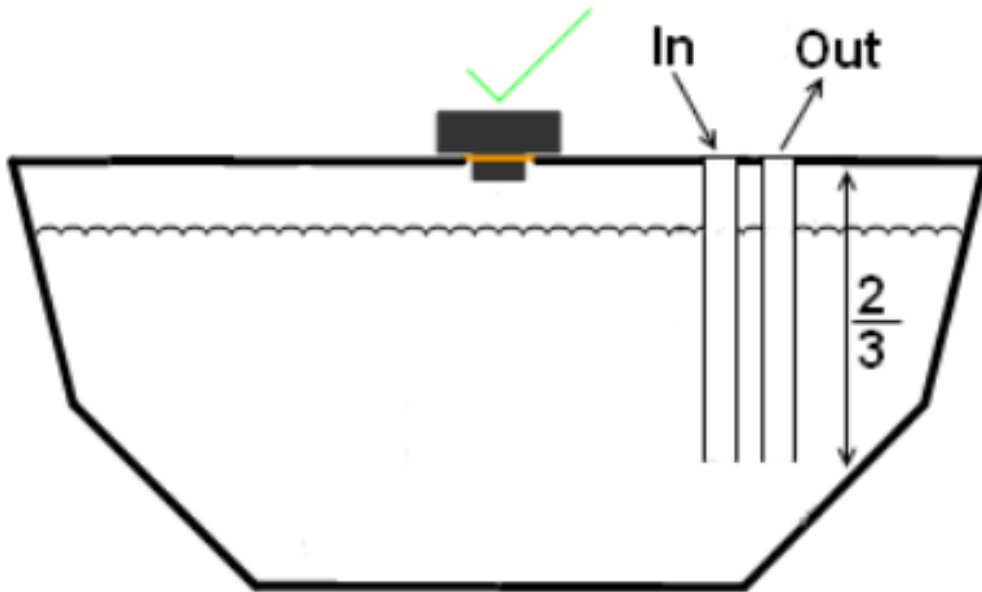
Use 5 washers provided, washers must be placed under screw heads to prevent rubber lid damage.



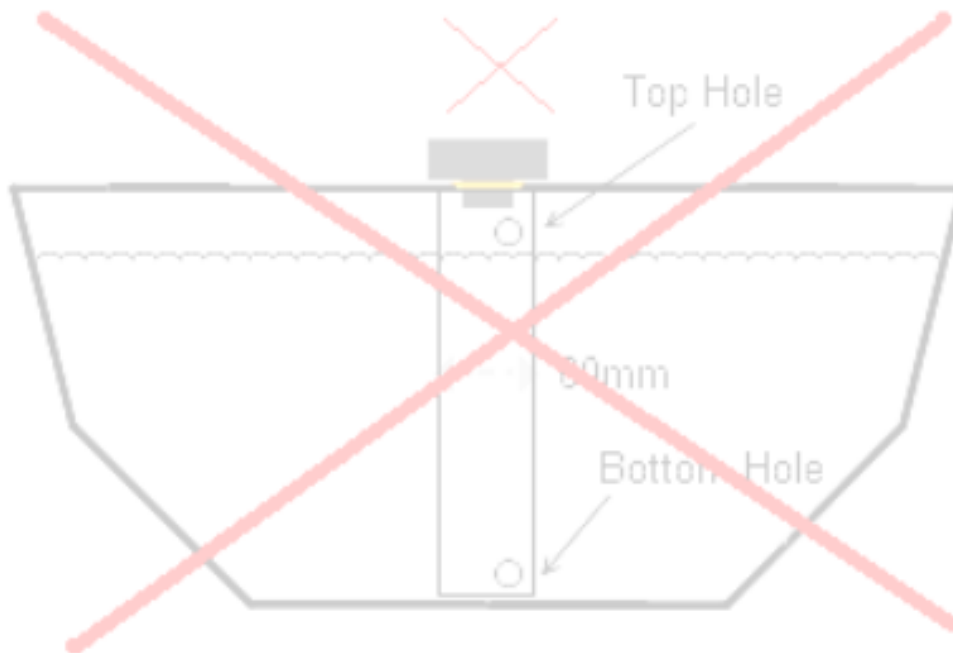
Acoustic protrusion must not touch the tank frame.



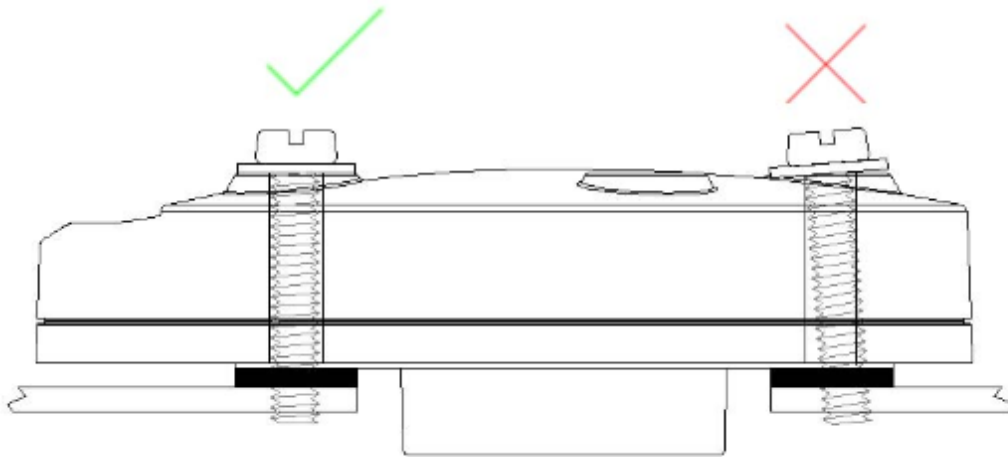
Sensor must be mounted so it can see the bottom of the tank if the liquid is to be measured to the bottom.



Inlet and Outlet piping must go in at least $\frac{2}{3}$ rd of the way in to the tank on grey and black water tanks to stop water turbulence when filling.



Do not fit the sensor with a tube.



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

5. Using the Wireless Sensors



5.1. Connect wireless hub to SensorGateway

Firstly, as shown in the picture, connect the Wireless Hub to the **2nd Port(right port)** of the SensorGateway using an RJ45 connector as that will be the medium between the wireless sensors and the SensorGateway.

Another Tab should populate on your gateway named “Wireless Information” and then you should see a drop down menu to connect, check and disconnect a wireless sensor.

Wireless sensors instructions

Instruction: connect a wireless sensor to a wireless hub ▼
connect a wireless sensor to a wireless hub
connect check wireless sensor connection status
disconnect a wireless sensor to a wireless hub

1. click Enable under Permit New Wireless Devices
2. Press the button on the wireless sensor for 4 consecutive times within 5 seconds(duration between pressing must be 1 second)
3. LED on the wireless sensor should blink twice
 - 1st blink is after a successful connection
 - 2nd blink is after a successful sending of data
4. Wireless sensor values should appear within 1 to 2 minutes on the wireless information page

5.2. Connect a wireless sensors to wireless hub

In preparation for this section, make sure to have with you a pin or some similar object that will fit through the tiny hole on the left side of the wireless sensor.

1. Click Enable under Permit New Wireless Devices

Permit New Wireless Devices

New wireless sensor must join within 60 seconds. Enable

2. Press the button on the wireless sensor for 4 consecutive times within 5 seconds (duration between pressing must be 1 second)
3. LED on the wireless sensor should blink twice
 - 1st blink is after a successful connection
 - 2nd blink is after a successful sending of data
4. Wireless sensor values should appear within 1 to 2 minutes on the wireless Information page

From the Wireless Information page, you should now see a signal being received on the Rssi column as well as its type, Serial, Name, and Batt Level.

Wireless Info

No.	Serial	Name	Type	Rssi	Batt Level
1	WT--0013	wtemp1	Temperature	-54 dBm	100 %
2		wtemp2	N/A	-1 dBm	-1 %
3		whum1	N/A	-1 dBm	-1 %
4	WT--0016	wtemp3	Temperature	-43 dBm	100 %
5	WT--0012	wtemp4	Temperature	-44 dBm	100 %
6	WTH-0005	wtemp5	Temperature	-44 dBm	100 %
7	WTH-0005	whum2	Humidity	-58 dBm	100 %
8		Ext. Temp	N/A	-1 dBm	-1 %
9		Ext. Temp	N/A	-1 dBm	-1 %
10		Ext. Temp	N/A	-1 dBm	-1 %
11		Ext. Temp	N/A	-1 dBm	-1 %
12		Ext. Temp	N/A	-1 dBm	-1 %
13		Ext. Temp	N/A	-1 dBm	-1 %
14		Ext. Temp	N/A	-1 dBm	-1 %
15		Ext. Temp	N/A	-1 dBm	-1 %
16		Ext. Temp	N/A	-1 dBm	-1 %

Finally, after which, you will now be able to view your wireless sensors. From here on, the wireless sensor will update the wireless hub every 2 minutes.

Sensor Status

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SMS	SNMP Trap
✔	Internal Temp	Temp	Int. Temp	24.20 °C	< 18.1 or > 37.1	< 15.1 or > 41.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
✔	Temperature	Temp	Ext. Temp	22.25 °C	< 18.1 or > 25.1	< 15.1 or > 29.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
✔	Wireless Sensor	Temp	wtemp1	21.50 °C	< 18.1 or > 25.1	< 15.1 or > 29.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
✔	Wireless Sensor	Temp	wtemp2	23.16 °C	< 18.1 or > 25.1	< 15.1 or > 29.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
✔	Wireless Sensor	Humidity	whum1	56.50 %RH	< 45.1 or > 65.1	< 40.1 or > 70.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
✔	Wireless Sensor	Temp	wtemp4	22.43 °C	< 18.1 or > 25.1	< 15.1 or > 29.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.3. Check wireless sensor connection status

1. Press the button on the wireless sensor once
2. If LED on the wireless sensor blinks for 4 times, wireless sensor is currently not connected
3. If LED on the wireless sensor blinks once, Wireless sensor is currently connected (but may blink twice if the pressing of the button is close to the time that the wireless sensor is sending data)

5.4. Disconnect a wireless sensor to a wireless hub

1. Press and hold the button on the wireless sensor for 10 seconds
2. The LED on the wireless sensor will blink for 4 times
3. The corresponding wireless sensor should disappear from the wireless information page.
Note: If current status of the wireless sensor is disconnected, the LED will not blink even after you press it for 10 seconds

5.5. Restrictions

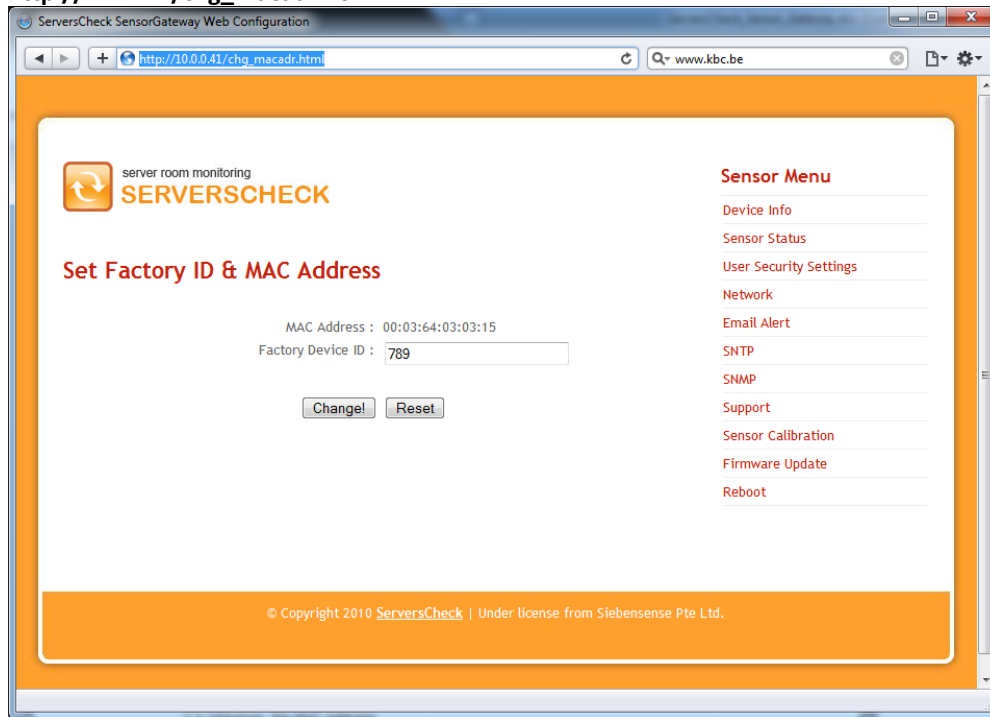
Only one (1) wireless hub can be connected to the SensorGateway. While the wireless hub is able to retrieve values from 30 sensors, please be reminded that this doesn't mean 30 physical sensors can be read by it. This dilemma arises when using a temperature and humidity sensor since one physical sensor will count for two logical sensors. Thus when opting for that type of sensor, for example, you'll be restricted to permit 15 temperature and humidity sensors to your wireless hub. But otherwise for the temperature (only) sensor, you can go for up to 30 physical temperature sensors.

5.6. Reconnection Window

For a number of reasons, if a wireless sensor fails to send its update, it will try to connect every minute for 3 times. After that, if it still fails, it will try to reconnect every 5 minutes for 1 hour (12 times). If during that period the sensor still fails to push its data, it will now go to sleep in order to save its battery. From that point onwards, you'll have to manually rejoin the wireless sensor once more as indicated on the Wireless Information section.

5.7. Changing the MAC Address

The MAC address of a SensorGateway can be changed by going to the special web page at http://X.X.X.X/chg_macadr.html



Enter a new 4-digit number for factory device ID and the MAC address will be changed.

5.8. SensorGateway Interface Overview

Connect to the ServersCheck SensorGateway using your browser and on the IP address defined in previous section.

The screenshot shows the ServersCheck SensorGateway Web Configuration interface. The browser address bar displays `http://10.0.0.36/sensor_status.html`. The page features a navigation menu on the right (labeled 1) with options: Device Info, Sensor Status, User Security Settings, Network, Email Alert, SNT, SNMP, Support, Firmware Update, and Reboot. The main content area (labeled 2) displays the 'Sensor Status' page with a table of sensor readings. The table has columns for State, Id, Type, Name, Current Value, Warning Range, Down Range, Repeat Alarm, Email, SNMP Trap, and Del. Three sensors are listed: InternalTemp (93.76 °F), TempHum (74.41 °F), and TempHum (51.41 %RH). The InternalTemp sensor is highlighted with a black box (labeled 3). Below the table are 'Update' and 'Refresh' buttons. The footer contains the text: '© Copyright 2010 ServersCheck | Under license from Siebensense Pte Ltd.'

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SNMP Trap	Del
✓	InternalTemp	Temp.	Undefined1	93.76 °F	< 18.00 ~ > 37.00	< ~ > 15.00 41.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✗
✓	TempHum	Temp.	Undefined2	74.41 °F	< 18.00 ~ > 25.00	< ~ > 15.00 29.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✗
✓	TempHum	Humid.	Undefined3	51.41 %RH	< 45.00 ~ > 65.00	< ~ > 40.00 70.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✗

(1) This is the main navigation menu of the ServersCheck SensorGateway. All the different menu options are outlined in the following sections of the user manual.

(2) Is the screen of the actual menu option you are in. Whenever connecting to the SensorGateway, it always shows the Sensor Status page first with the latest sensor readings refreshed every 5 seconds.

(3) The InternalTemp shown in here is the Internal Temperature Sensor of the SensorGateway. External probes are shown below the built-in temperature probe.

Depending on the conditions in which the SensorGateway and/or probes are placed, a smaller or larger offset compared to actuals from a certified calibration system may be noticed. To solve that, the sensors can be easily recalibrated as explained in section 15 of this document.

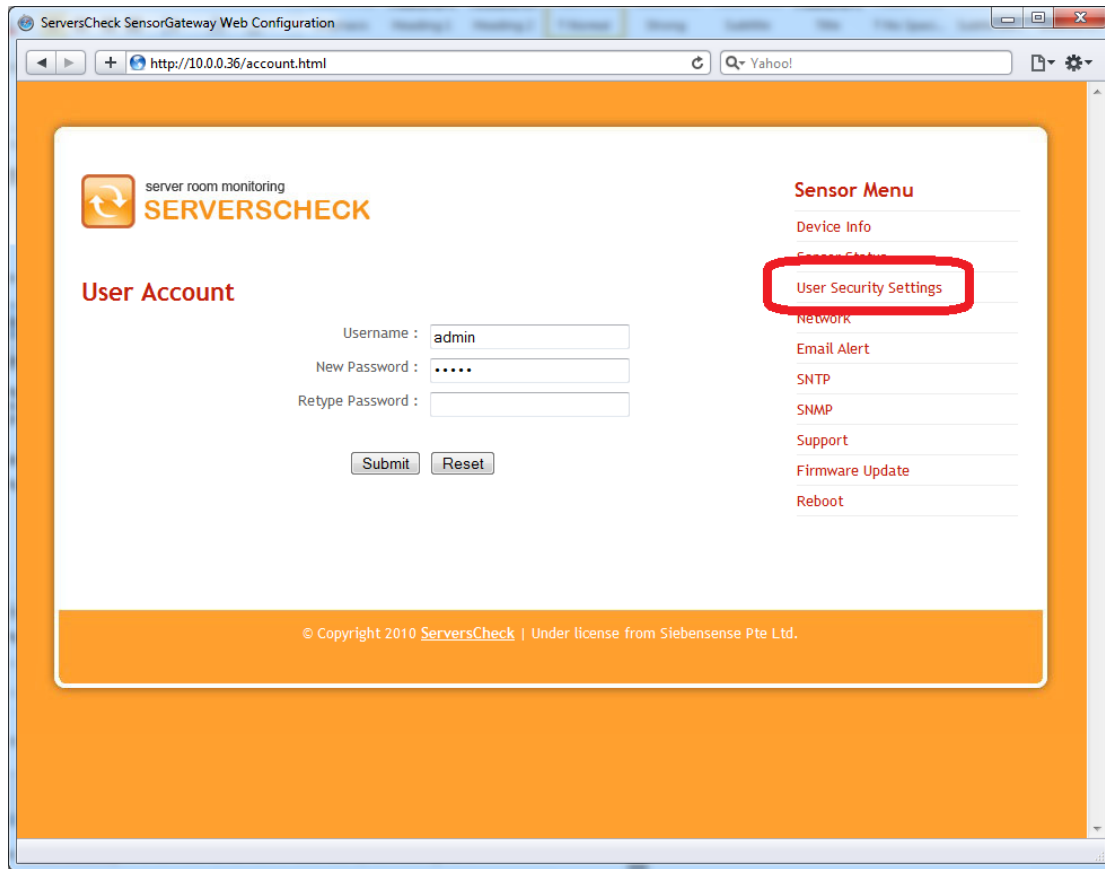
5.9. HTTPS Access

The SensorGateway can be accessed via HTTPS by choosing "Enable" on the "Https Access" field found on the "Device Info" page. Before the unit becomes exclusively available only through HTTPS, you'd have to restart the browser used first.

5.10. Configuring the SensorGateway's access security

The SensorGateway's can be username and password secured. Default factory values are **admin / admin**

To change the values click on the **User Security Settings** menu option

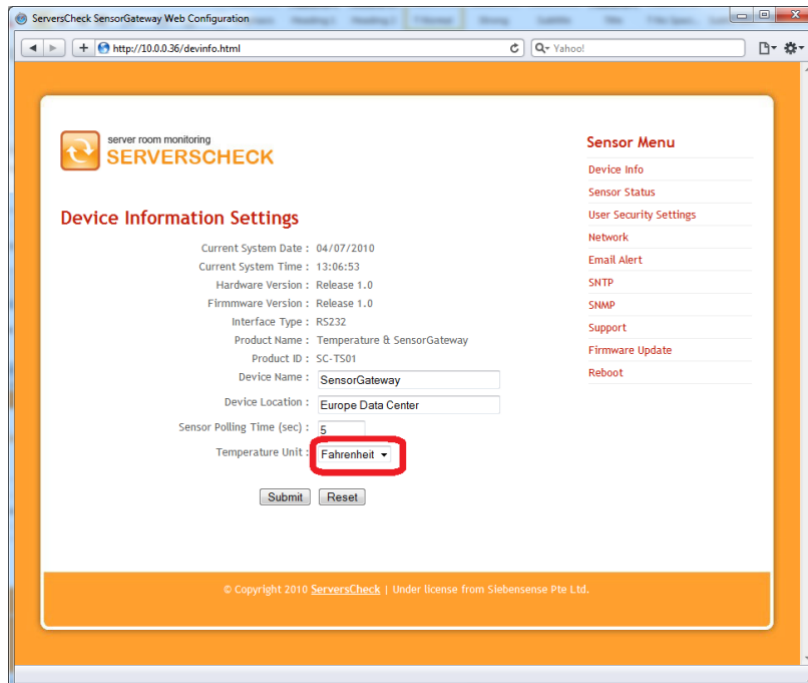


When done click on the **Submit** button. You will be prompted for the new username and password.



5.11. 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 SensorGateway, click on the **Device Info** menu option and change the value to **Fahrenheit**

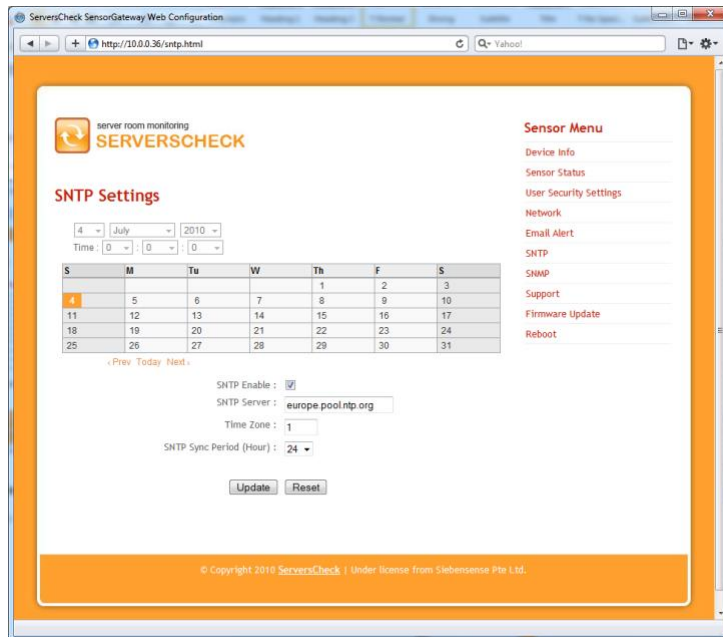


5.12. Sensor Polling/Refresh Time

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

5.13. Configuring internal clock of the SensorGateway

To modify the internal clock, click on the **SNTP** menu option. You can either set it manually or have it synchronized with a timeserver as shown in the picture below. Click on **Submit** when done



SensorGateway hardware version 5 users may experience an issue with configuring the time server for a negative time zone. This has been fixed in firmware 3.0.2 which can be downloaded from our website.

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
Argentina	-03	Malta *	+01
Armenia	+04	Marshall Islands	+12
Australia – 5 time zones		Mauritania	±00
Western Australia +08 Northern Territory +09 South Australia * +09 Australian Capital Territory * +10 New South Wales * +10 Queensland +10 Tasmania * -10 Victoria * +10 Lord Howe Island * +10 Macquarie Island +11		Mauritius	+04
Australian Overseas Territories – 6 time zones		Mexico * – 3 time zones	
Heard Island and McDonald Islands +05 Cocos (Keeling) Islands +06 Christmas Island +07 Ashmore and Cartier Islands +08 Coral Sea Islands +10 Norfolk Island +11		The state of Baja California –08 The states of Baja California Sur, Chihuahua, Nayarit, Sinaloa and Sonora –07 Most of Mexico –06	
Austria *	+01	Micronesia – 2 time zones	
Azerbaijan *	+04	The states of Chuuk and Yap +10 The states of Kosrae and Pohnpei +11	
B		Moldova *	+02
Bahamas *	-05	Monaco *	+01
Bahrain	+03	Mongolia * – 2 time zones	
Bangladesh	+06	Provinces of Khovd, Uvs, Bayan-Olgii +07 Ulaanbaatar and most of the country +08	
Barbados	-04	Montenegro *	+01
Belarus	+03	Morocco *	±00
Belgium *	+01	Mozambique	+02
Belize	-06	Myanmar (Burma)	+06::
Benin	+01	N	
Bhutan	+06	Namibia	+01
Bolivia	-04	Nauru	+12
Bosnia and Herzegovina *	+01	Nepal	+05:45

Botswana	+02	Netherlands *	+01
Brazil – 4 time zones		Netherlands Overseas Territories – 1 time zones	
Acre and Southwestern Amazonas –05 Most part of the Amazonas State, Mato Grosso, Mato Grosso do Sul, Rondônia, Roraima –04 The Southeast, the South, the Northeast Regions (except some islands), Goiás, Distrito Federal, Tocantins, Pará, Amapá –03 Islands on the east coast of Brazil (Fernando de Noronha, Trindade, Martin Vaz, Atol das Rocas, Saint Peter and Paul Rocks) –02		Aruba –04 Caribbean Netherlands –04 Curaçao –04 Sint Maarten –04	
Brunei	+08	New Zealand *	+12
Bulgaria *	+02	New-Zealand's Dependent Territories – 4 time zones	
Burkina Faso	±00	Niue –11 Cook Islands –10 Chatham Islands +12:45 Tokelau +13	
Burundi	+02	Nicaragua	–06
C		Niger	+01
Cabo Verde	–01	Nigeria	+01
Cambodia	+07	North Korea	+09
Cameroon	+01	Norway *	+01
Canada – 6 time zones		O	
Larger western part of British Columbia, Tungsten and the associated Cantung Mine in Northwest Territories, Yukon –08 Alberta, some eastern parts of British Columbia, the Northwest Territories, Nunavut (west of 102°W and all communities in the Kitikmeot Region), Lloydminster –07 Manitoba, Nunavut (between 85°W and 102°W except western Southampton Island), Ontario (Northwestern Ontario west of 90°W with some exceptions and Big Trout Lake area east of 90°W), Saskatchewan except Lloydminster –06 Nunavut east of 85°W and entire Southampton Island, Ontario east of 90°W (except Big Trout Lake area), the most part of Quebec –05 Labrador (all but southeastern tip), New Brunswick, Nova Scotia, Prince Edward Island, eastern part of Quebec –04 Labrador (southeastern), Newfoundland –03		Oman	+04
Central African Republic	+01	P	
Chad	+01	Pakistan	+05
Chile	–04	Palau	+09
Chile - Easter Island	–06	Palestine *	–06
China	+08	Panama	–05
Colombia	–05	Papua New Guinea	+10
Comoros	+03	Paraguay	–04
Congo, Republic of the	+01	Peru	–05
Congo, Dem. Rep. - Kinshasa	+01	Philippines	+08
Congo, Dem. Rep. - Lubumbashi	+02	Poland *	+01
Costa Rica	–06	Portugal *	±00
Cote d'Ivoire	±00	Portugal - Azores *	+01
Croatia *	+01	Q	
Cuba *	–05	Qatar	+03
Cyprus *	+02	R	
Czech Republic *	+01	Romania *	+02
D		Russia – 9 time zones	
Denmark *	+01	Kaliningrad Oblast +03 Most of European Russia and all railroads throughout Russia +04 Bashkortostan, Chelyabinsk Oblast, Khanty–Mansia, Kurgan Oblast, Orenburg Oblast, Perm Krai, Sverdlovsk Oblast, Tyumen Oblast, and Yamalia +06 Altai Krai, Altai Republic, Kemerovo Oblast, Novosibirsk Oblast, Omsk Oblast and Tomsk Oblast +07 Khakassia, Krasnoyarsk Krai and Tuva +08 Buryatia and Irkutsk Oblast +09 Amur Oblast, western Sakha Republic and 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	
Denmark's Dependent Territories * – 4 time zones		Rwanda	+02
The most of Greenland, including inhabited south coast and west coast –03 Greenland - Thule Air Base –04 Greenland - Ittoqqortoormiit –01 Faroe Islands ±00		S	
Djibouti	+03	St. Kitts and Nevis	–04
Dominica	–04	St. Lucia	–04
Dominican Republic	–04	St. Vincent and The Grenadines	–04
E		Samoa	+13
Ecuador	–05	San Marino *	+01
Ecuador - Galapagos Province	–06	Sao Tome and Principe	±00
Egypt	+02	Saudi Arabia	+03
El Salvador	–06	Senegal	±00
Equatorial Guinea	+01	Serbia *	+01
Eritrea	+03	Seychelles	+04
Estonia *	+02	Sierra Leone	±00
Ethiopia	+03	Singapore	+08
F		Slovakia *	+01
Fiji	+12	Slovenia *	+01
Finland *	+02	Solomon Islands	+11
France *	+01	Somalia	+03
		South Africa	+02
		South Korea	+09
		South Sudan	+03
		Spain *	+01
		Spain - Canary Islands *	±00
		Sri Lanka	+05
		Sudan	+03
		Suriname	–03

French Overseas Territories – 10 time zones		Swaziland	+02
		Sweden *	+01
		Switzerland *	+01
		Syria *	+02
		T	
		Taiwan	+08
		Tajikistan	+05
		Tanzania	+03
		Thailand	+07
		Timor-Leste	+09
		Togo	±00
		Tonga	+13
		Trinidad and Tobago	-04
		Tunisia	+01
		Turkey *	+02
		Turkmenistan	+05
		Tuvalu	+12
		U	
		Uganda	+03
		Ukraine	+02
		United Arab Emirates	+04
		United Kingdom *	±00
		British Overseas Territories – 9 time zones	
		Pitcairn Islands -08 Cayman Islands -05 Anguilla -04	
		Bermuda -04 British Virgin Islands -04 Montserrat -04 Turks	
		and Caicos Islands -04 Falkland Islands -03 South Georgia	
		and the South Sandwich Islands -02 Saint Helena ±00	
		Ascension and Tristan da Cunha ±00 Guernsey * ±00 Isle of	
		Man * ±00 Jersey * ±00 Gibraltar * +01 Akrotiri and Dhekelia	
		* +02 British Indian Ocean Territory +06	
		United States of America * – 6 time zones	
		Hawaii, most of the Aleutian Islands -10 Most of the state of	
		Alaska -09 The states on the Pacific coast plus Nevada, parts	
		of Idaho -08 Arizona, Colorado, Montana, New Mexico, Utah,	
		parts of Idaho, Kansas, Oregon, North Dakota, South Dakota,	
		Texas -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,	
		most of Michigan -05	
		US Dependent Territories – 7 time zones	
		Baker Island -12 Howland Island -12 American Samoa -11	
		Kingman Reef -11 Midway Islands -11 Palmyra Atoll -11	
		Jarvis Island -10 Johnston Atoll -10 Navassa Island -05	
		Puerto Rico -04 US Virgin Islands -04 Guam +10 Northern	
		Mariana Islands +10 Wake Island +12	
		Uruguay	-03
		Uzbekistan	+05
		V	
		Vanuatu	+11
		Vatican City (Holy See) *	+01
		Venezuela	-04
		Vietnam	+07
		Y	
		Yemen	+03
		Z	
		Zambia	+02
		Zimbabwe	+02
French Polynesia - Tahiti Island -10 French Polynesia -			
Marquesas Islands -09 French Polynesia - Gambier Islands			
-09 Clipperton Island -07 Guadeloupe -04 Martinique -04			
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			
G			
Gabon	+01		
Gambia	±00		
Georgia	+04		
Germany *	+01		
Ghana	±00		
Greece *	+02		
Grenada	-04		
Guatemala	-06		
Guinea	±00		
Guinea-Bissau	±00		
Guyana	-04		
H			
Haiti *	-05		
Honduras	-06		
Hungary *	+01		
I			
Iceland	±00		
India	+05		
Indonesia – 3 time zones			
Islands of Sumatra, Java, provinces of West Kalimantan and			
Central Kalimantan +07 Islands of Sulawesi, Bali, provinces of			
East Nusa Tenggara, West Nusa Tenggara, East Kalimantan			
and South Kalimantan +08 Provinces of Maluku, North			
Maluku, Papua and West Papua +09			
Iran *	+03		
Iraq	+03		
Ireland *	±00		
Israel *	+02		
Italy *	+01		
J			
Jamaica	-05		
Japan	+09		
Jordan *	+02		
K			
Kazakhstan - Oral, Aktobe	+05		
Kazakhstan - Almaty, Astana	+06		
Kenya	+03		
Kiribati – 3 time zones			
Gilbert Islands +12 Phoenix Islands +13 Line Islands +14			
Kosovo *	+01		
Kuwait	+03		
Kyrgyzstan	+06		
L			
Laos	+07		
Latvia *	+02		
Lebanon *	+02		
Lesotho	+02		
Liberia	±00		
Libya	+01		
Liechtenstein *	+01		
Lithuania *	+02		
Luxembourg *	+01		

5.14. Configuring the SensorGateway for SNMP

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

The SensorGateway supports 2 kinds of SNMP messages:

- Pulling: a network management systems requests status for the sensors through SNMP get requests
- Pushing: the SensorGateway 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>

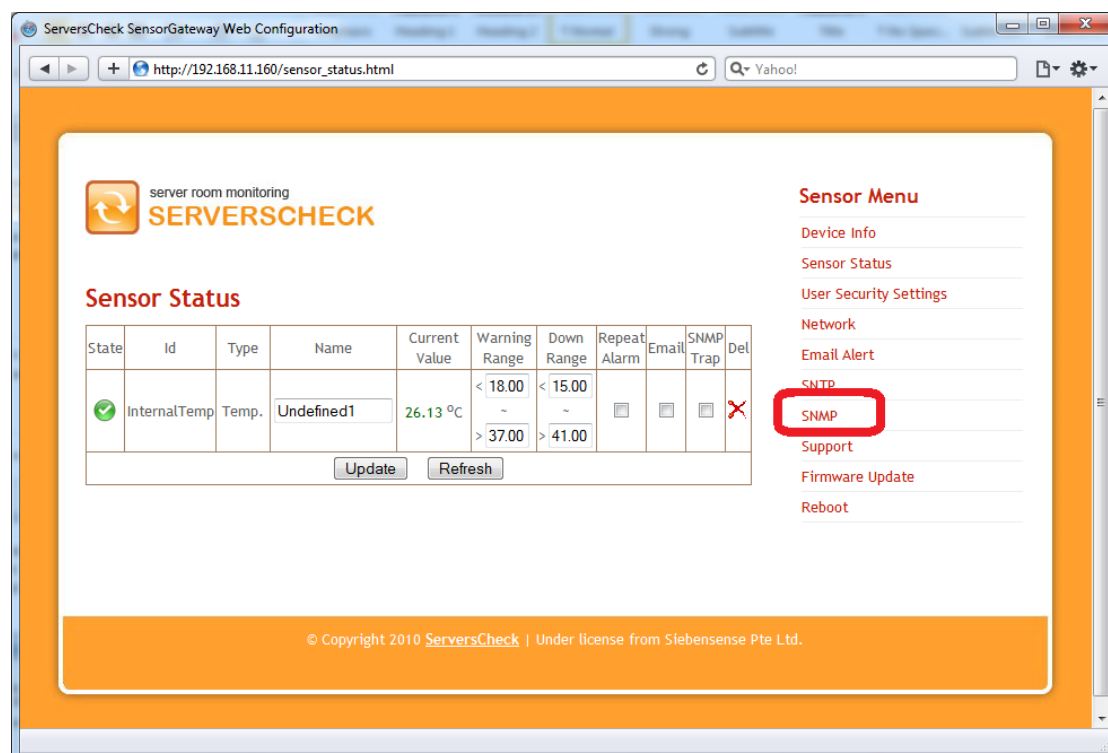
5.15. SNMP Get Requests

In the SensorGateway 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 SensorGateway has its own MIB file which can be downloaded here:

<http://downloads.serverscheck.com/sensors/sensorgateway.mib>

To enable SNMP, connect to the SensorGateway and click on the **SNMP** menu option



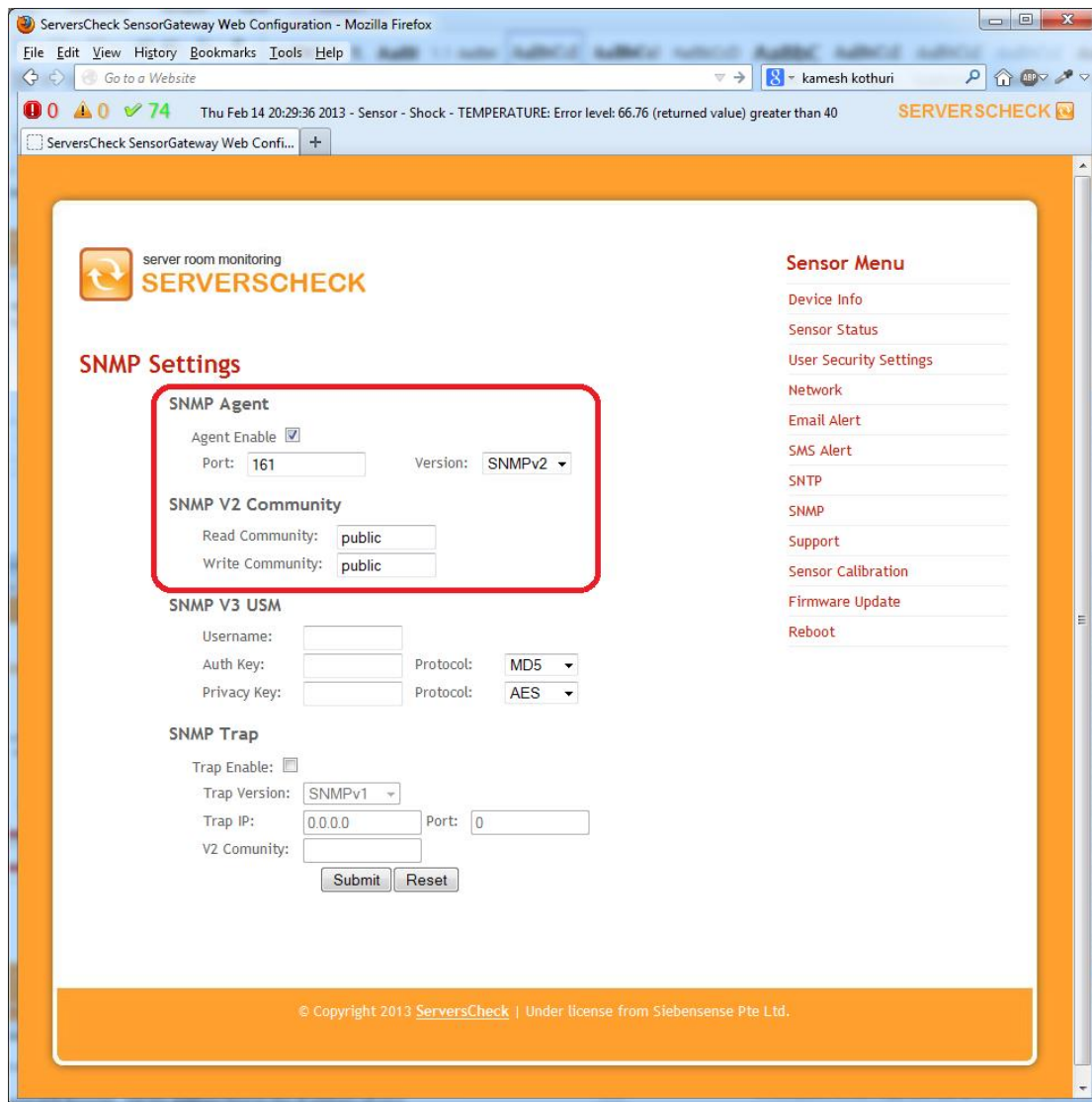
The screenshot shows the ServersCheck SensorGateway Web Configuration interface. The main content area displays the 'Sensor Status' table and a 'Sensor Menu' on the right. The 'Sensor Status' table has the following data:

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SNMP Trap	Del
✓	InternalTemp	Temp.	Undefined1	26.13 °C	< 18.00 ~ > 37.00	< 15.00 ~ > 41.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Below the table are 'Update' and 'Refresh' buttons. The 'Sensor Menu' on the right includes options like Device Info, Sensor Status, User Security Settings, Network, Email Alert, and SNMP (which is highlighted with a red box). Other options include Support, Firmware Update, and Reboot. The footer of the page reads: © Copyright 2010 ServersCheck | Under license from Siebensense Pte Ltd.

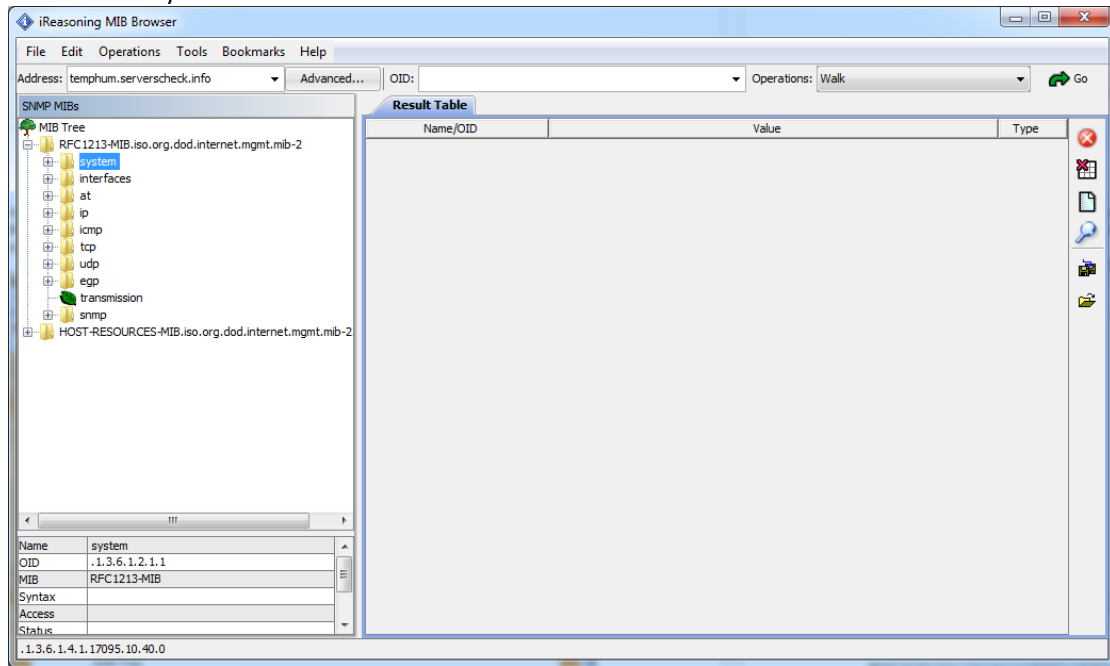
You need now to enable the **SNMP Agent** (default port for this UDP 161). If you want to use a different community string, then you can change the value too. Community string is limited to 16 characters. Default value for a read community is typically **public**

Make sure the community string does not exceed 16 characters

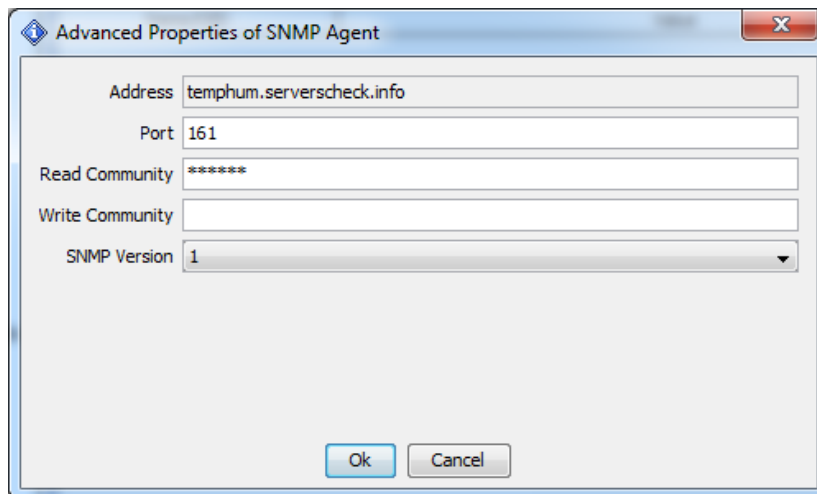
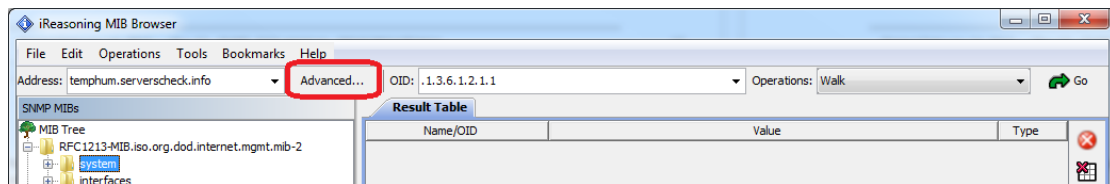


Click on the **Submit** button when done.

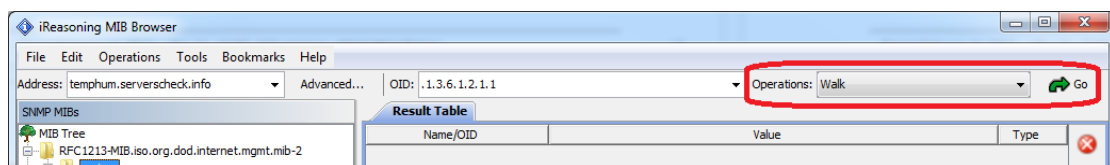
Now let's open the iReasoning MIB Browser. Set the **Address** field to the IP address of your SensorGateway



Click on the **Advanced** button

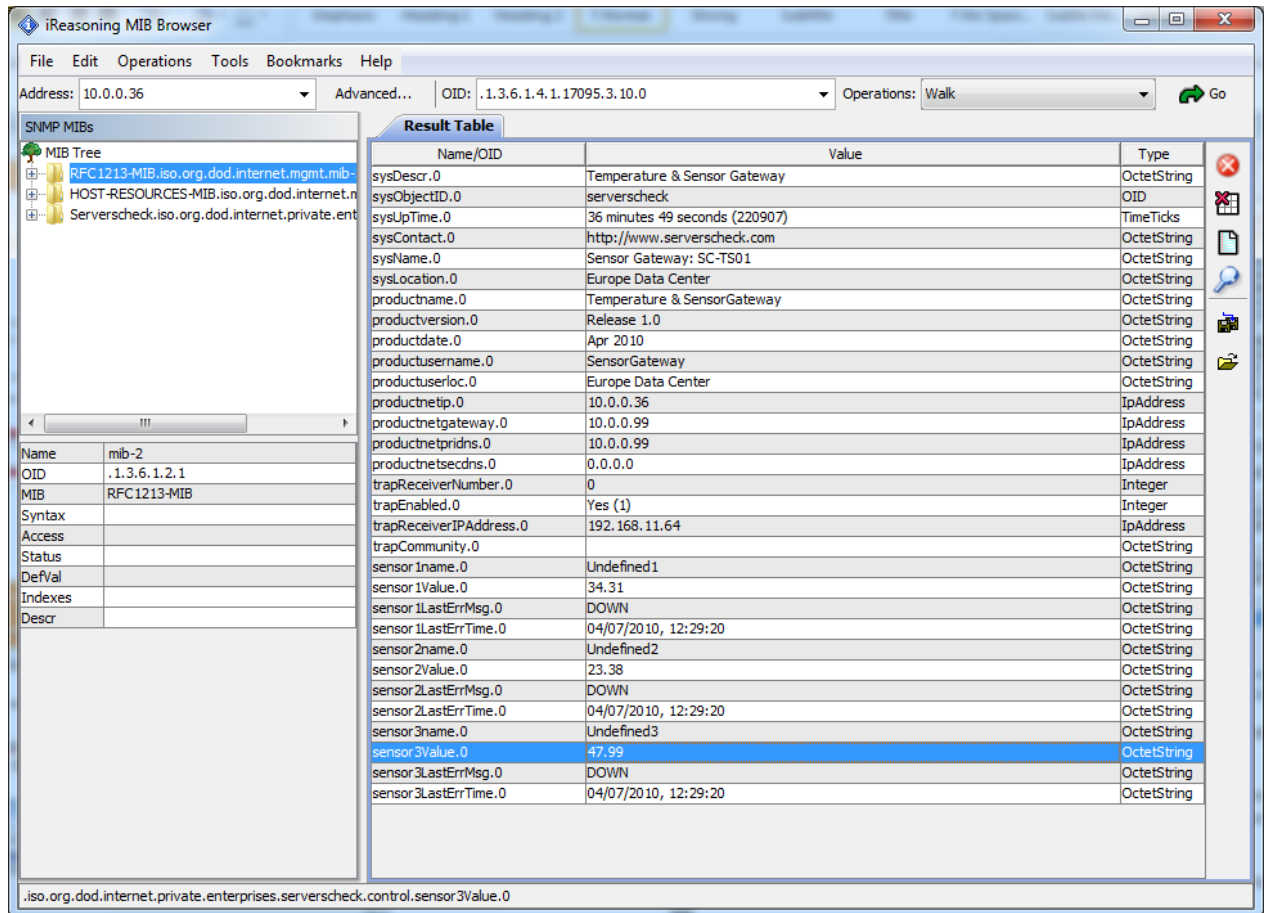


In above screen confirm the Port as previously defined as well as the read community. Click on the **OK** button.



In the main screen, set the **Operations** drop down box to **Walk**

When done, click on the **Go** button



In the above screen copy you see all the SNMP parameters as made available by the ServersCheck SensorGateway.

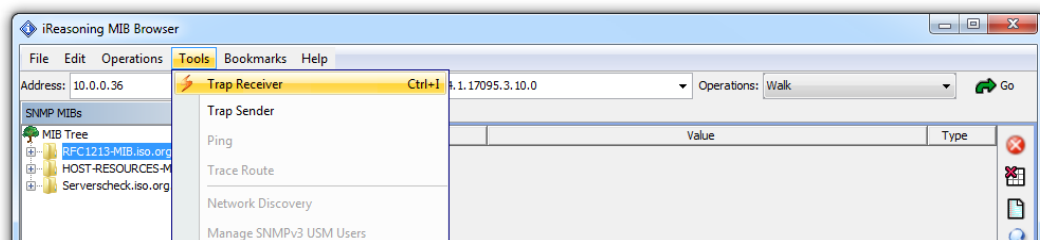
At the bottom you will see the values of the internal temperature sensor connected to the appliance (**sensor1Value.O**) and then of the values returned by external sensor probes connected to it.

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**

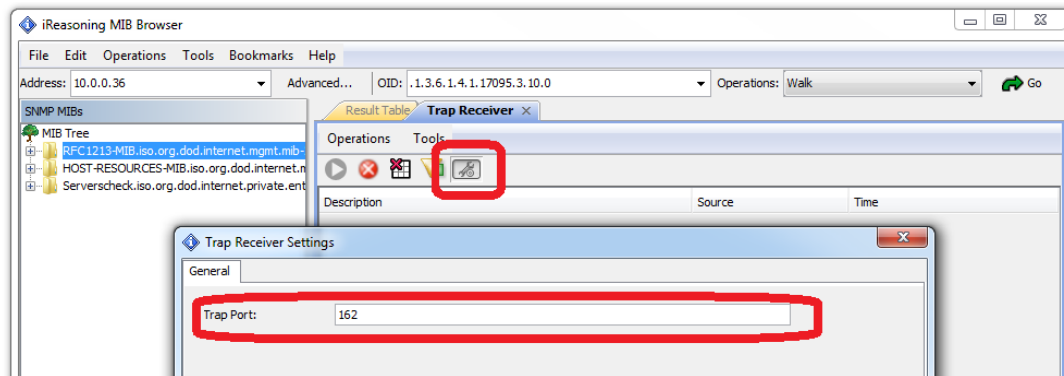
5.16. SNMP Traps

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

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



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 162



In the SensorGateway we now need to define the IP address of the system on which the SNMP Trap Receiver runs and the port to use. Those settings can be found in the **SNMP** menu option

SNMP Traps

Enable 1st Trap: Enable 2nd Trap:

Trap IP: Trap IP:

Trap Version:

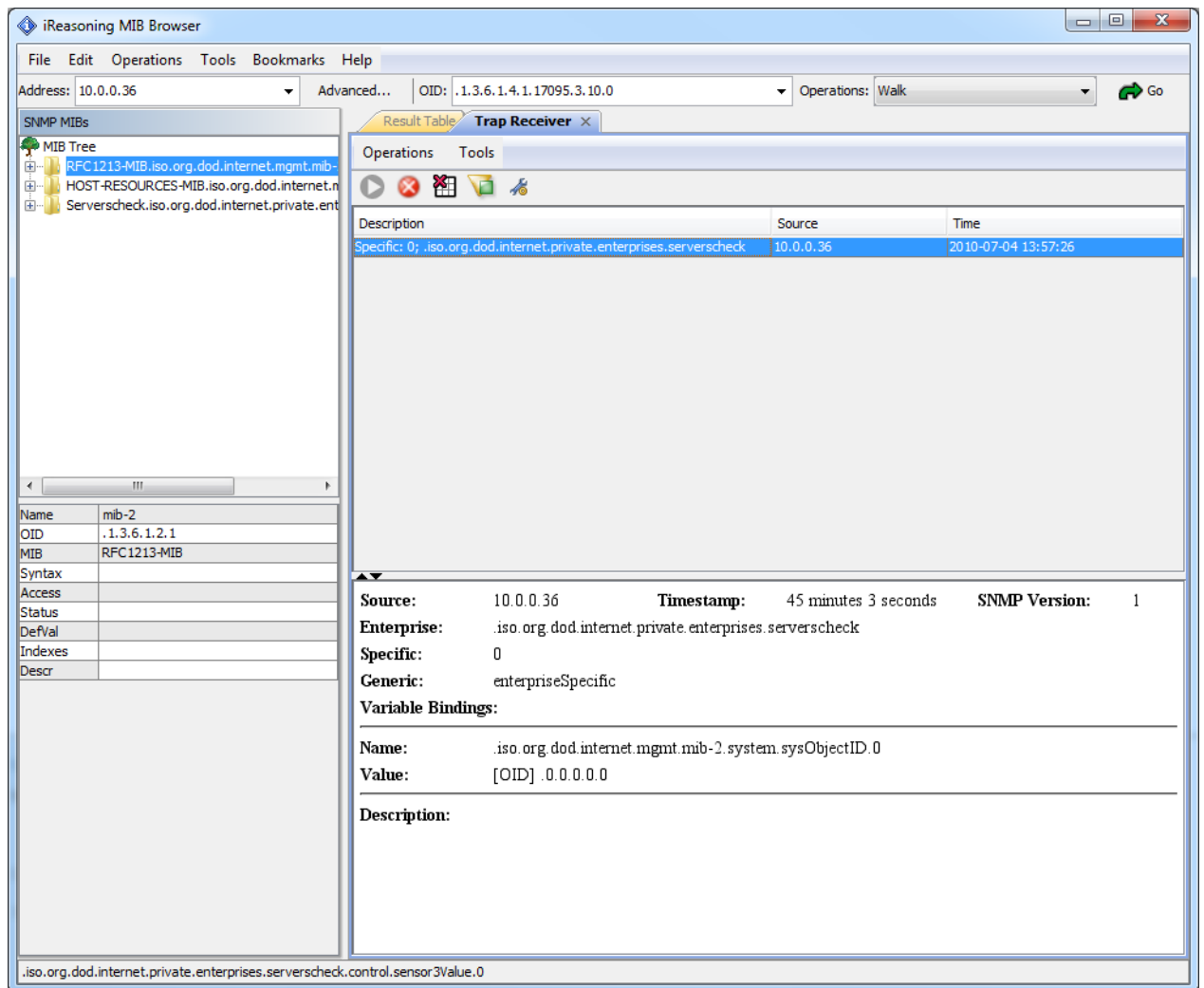
Port:

V2 Community:

Click on the **Submit** button when done. The SensorGateway will now send a test SNMP Trap to the Trap Receiver (iReasoning in this example).

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.

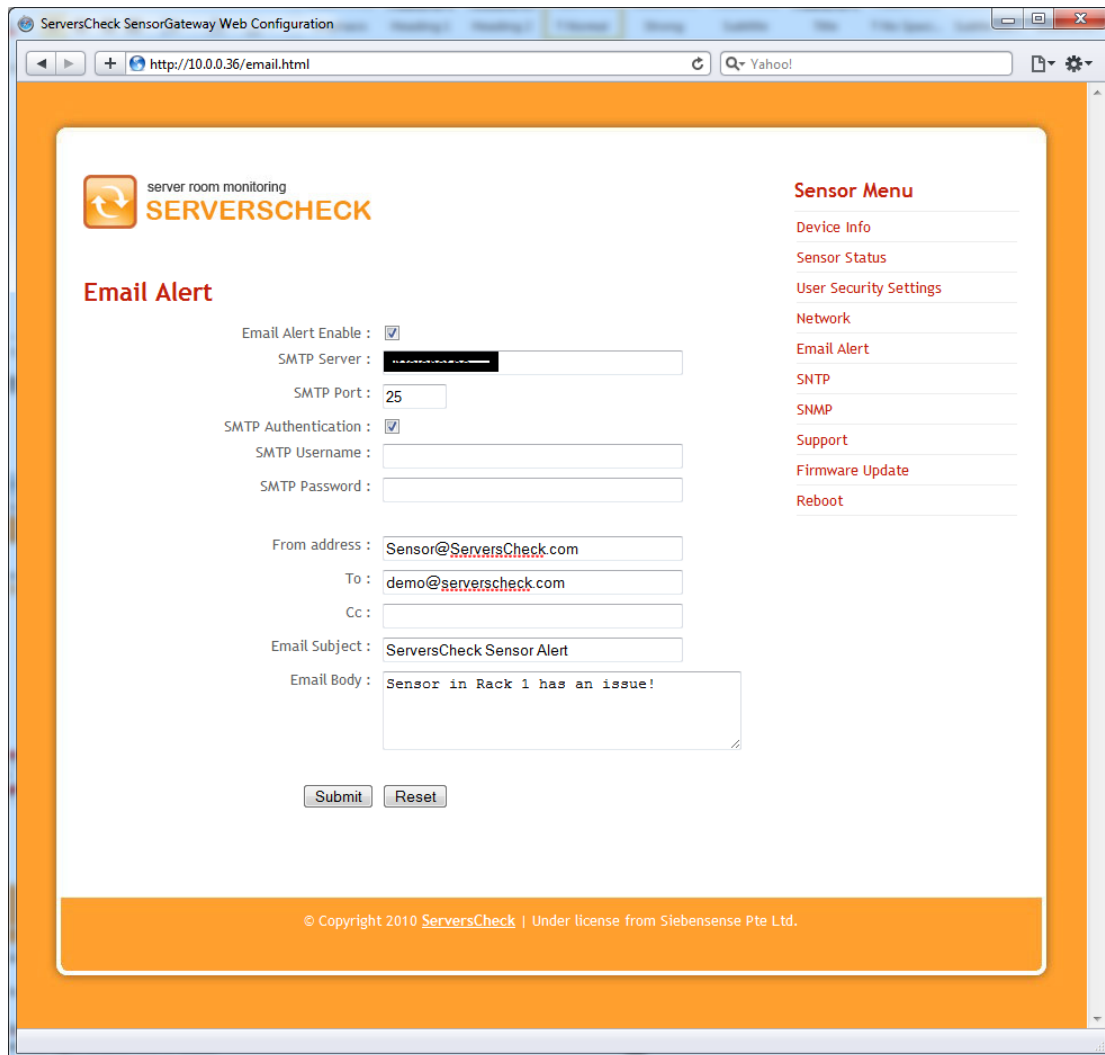


Above shows the SNMP Trap as received by iReasoning MIB Browser

6. Email alerting from SensorGateway

The ServersCheck sensors can generate autonomous alerts via SNMP Traps and also via email.

To setup email alerting, click on the **Email Alert** tab on the right hand side menu.



The screenshot shows the 'Email Alert' configuration page in the ServersCheck SensorGateway Web Configuration interface. The page is titled 'Email Alert' and features a 'Sensor Menu' on the right side with options like Device Info, Sensor Status, User Security Settings, Network, Email Alert, SMTP, SNMP, Support, Firmware Update, and Reboot. The main configuration area includes fields for SMTP Server, SMTP Port (set to 25), SMTP Authentication (checked), SMTP Username, SMTP Password, From address (Sensor@ServersCheck.com), To (demo@serverscheck.com), Cc, Email Subject (ServersCheck Sensor Alert), and Email Body (Sensor in Rack 1 has an issue!). There are 'Submit' and 'Reset' buttons at the bottom. The footer contains the copyright notice: © Copyright 2010 ServersCheck | Under license from Siebensense Pte Ltd.

This screen consists of 3 main parts:

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

Note: Sending to multiple recipients can be separated by a comma however the “To” and “Cc” fields are each limited to 80 character inputs, 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, ServersCheck 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.

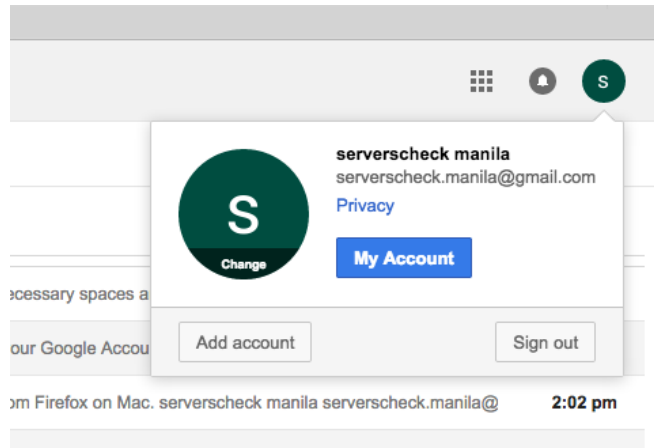
In some cases it may happen that you don’t have a non-SSL server available in your network or from your ISP. In such situations, we have 3 alternative solutions that may fix the issue.

6.1. Gmail as E-mail Server (<https://mail.google.com>)

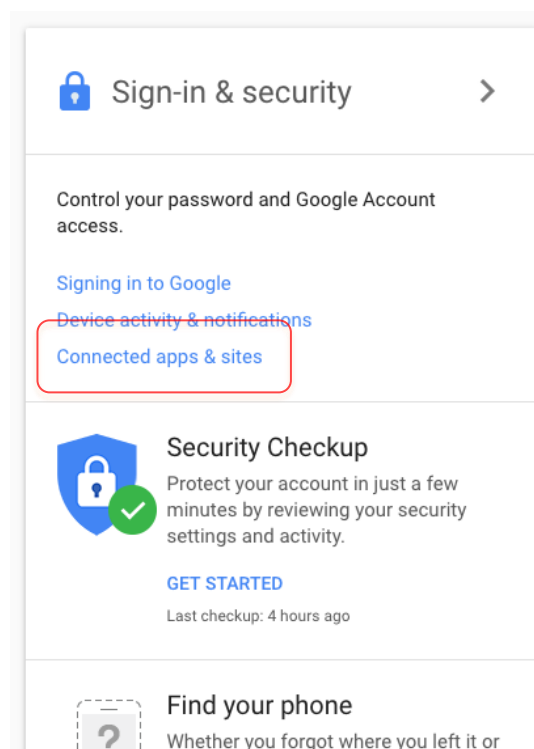
In order to use GMAIL as a mail server, you need to have a Gmail account and port 25 should not be blocked by your ISP. If it is blocked by your ISP and your ISP doesn't offer an 'open' mail server then see option 6.3.

Also make sure that your gmail account options for "allow less secured apps" is turned ON below are instructions on how to do that.

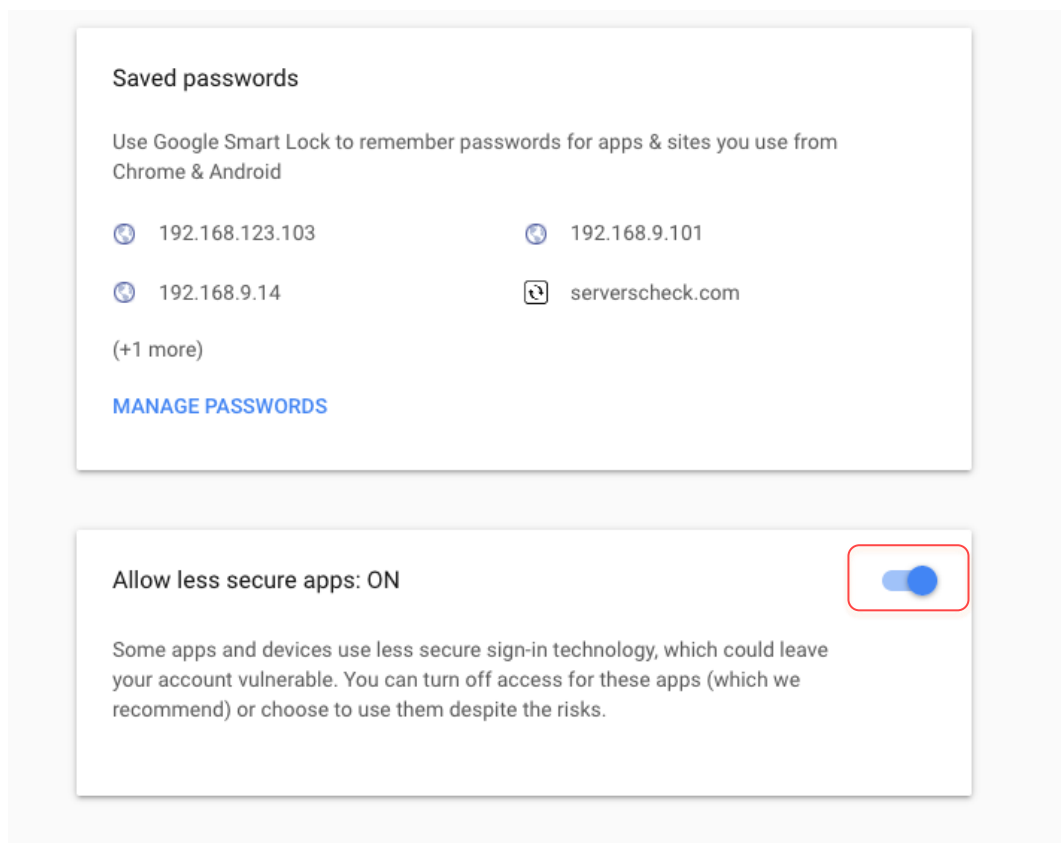
1. Log in on your Gmail account and access "My Account"



2. Under Sign-in Security click on "Connected apps & sites"



3. On the next page you should be able to activate the “allow less secure apps”



4. Once done you can now configure the gateway using your gmail account. Below are examples.

Email Alert Enable :

SMTP Server :

SMTP Port :

SMTP Authentication :

SMTP Username :

SMTP Password :

From address :

To :

Non-Secure Settings

SMTP Server: **aspmx.l.google.com**

SMTP Port: **25**

SMTP Authentication: **Off / Unchecked**

From address: **[yourmailname@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.

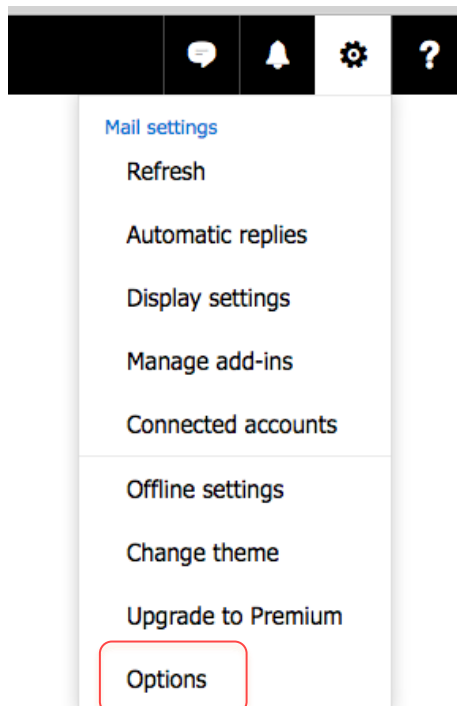
Note: Only version 5 SensorGateways are supported with Gmail's SSL ever since they offered RSA 2048-bit encryption.

6.2. Outlook mail as E-mail Server (<https://outlook.live.com>)

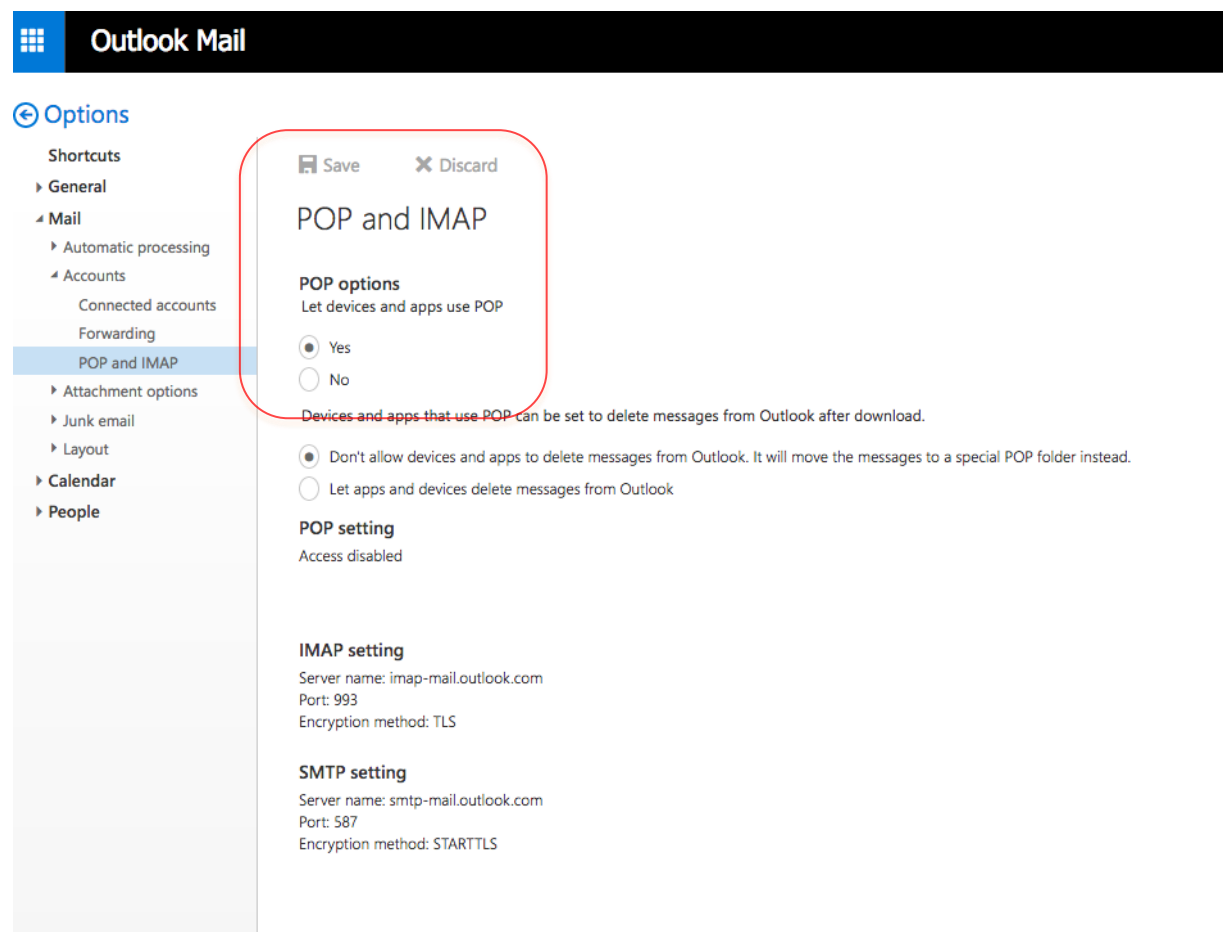
Outlook mail is another example of an SMTP server, which can be used on the gateway

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 it then expand “Accounts” then click on “POP and IMAP”



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**

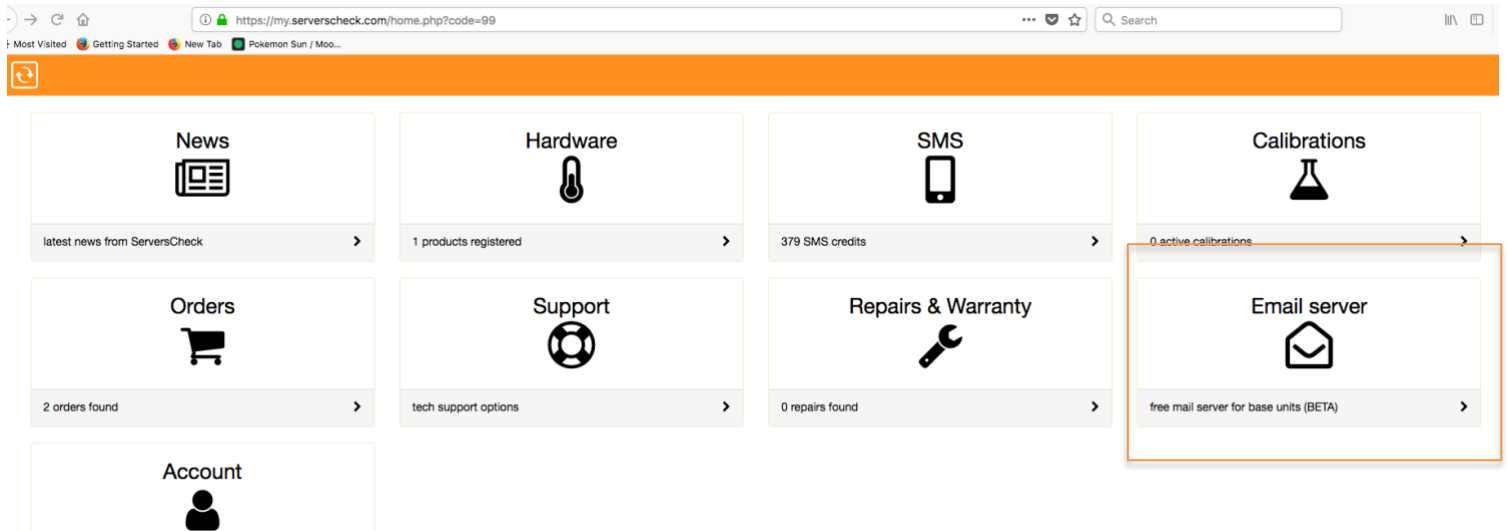
SMTP Username/Password: **Filled out**

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

6.3. Using ServersCheck Premium Email (<https://my.serverscheck.com>)

**A premium Account is free to create and is required to enjoy the service **

1. Log in to your ServersCheck Premium account and click on **Email Server**.



2. You should now see the configuration you have to copy in to your gateway's email settings to receive alerts using your accounts UID and PIN.

Note: Make sure you copy all details and leave the box for SSL unchecked. The service is FREE on every premium account.

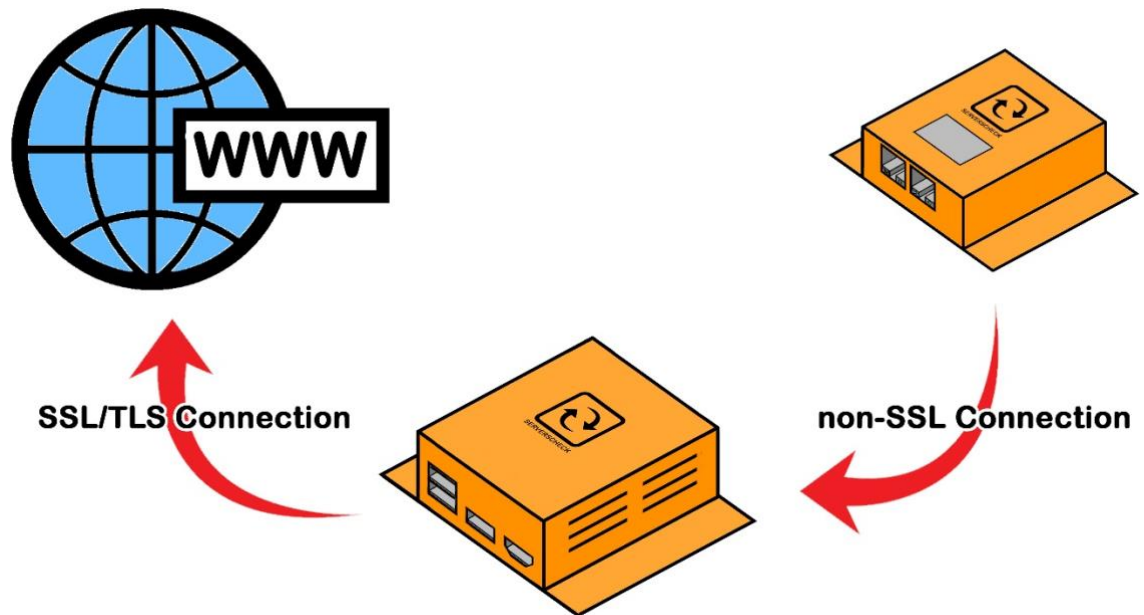
a. Tunneling an SSL connection

In this guide we will be using the Stunnel software installed on our ServersCheck Monitoring Appliance.

You can use STunnel to allow non-SSL devices such as the SensorGateway to connect to a secure mail server in which the SensorGateway 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.

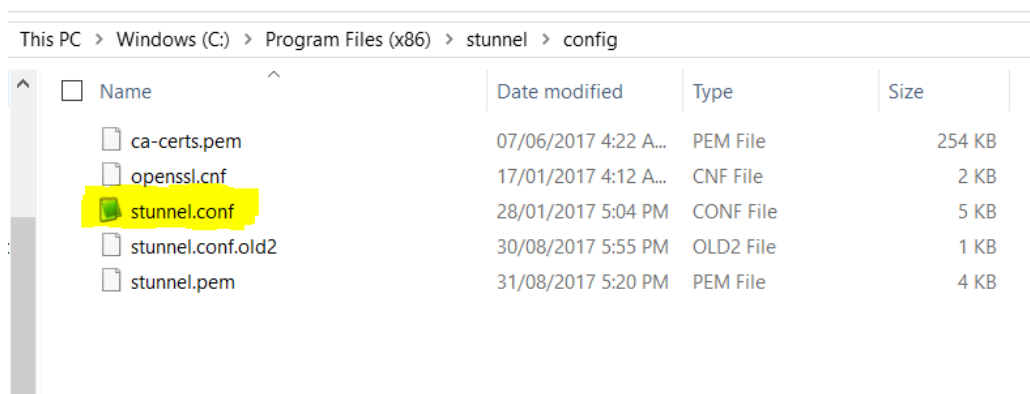


How to do it:

1. Download and Install the Stunnel Software (can be downloaded from: <http://www.stunnel.org/>)
2. During the installation you will be prompt to input details, which will be needed to created certificates.

```
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]:Zawentem
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++



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

> Control Panel > System and Security > Windows Firewall > Allowed apps

Allow apps to communicate through Windows Firewall

To add, change, or remove allowed apps and ports, click Change settings.

[What are the risks of allowing an app to communicate?](#) Change settings

Allowed apps and features:

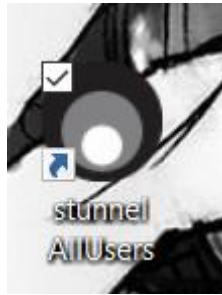
Name	Private	Public
<input checked="" type="checkbox"/> Store	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Store Experience Host	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> stunnel (GUI Version)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> stunnel (GUI Version)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> stunnel (Terminal Version)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> stunnel (Terminal Version)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Surface	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Sway	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> TPM Virtual Smart Card Management	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Twitter	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> View 3D	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Virtual Machine Monitoring	<input type="checkbox"/>	<input type="checkbox"/>

Details... Remove

Allow another app...

OK Cancel

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



- 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
```

- 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)

Not secure | 192.168.9.31/email.html



Email Alert

Enable Email Alerts :

SMTP Server :

SMTP Port :

Use SSL :

Use SMTP Authentication :

SMTP Username :

SMTP Password :

From address :

To :

Cc :

Email Subject :

Email Body :

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

b. 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).

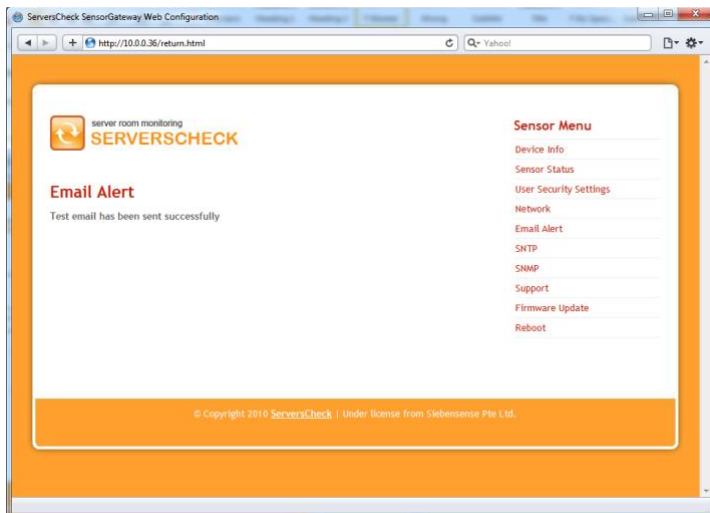
More information on <http://www.authsmtp.com>

Note:

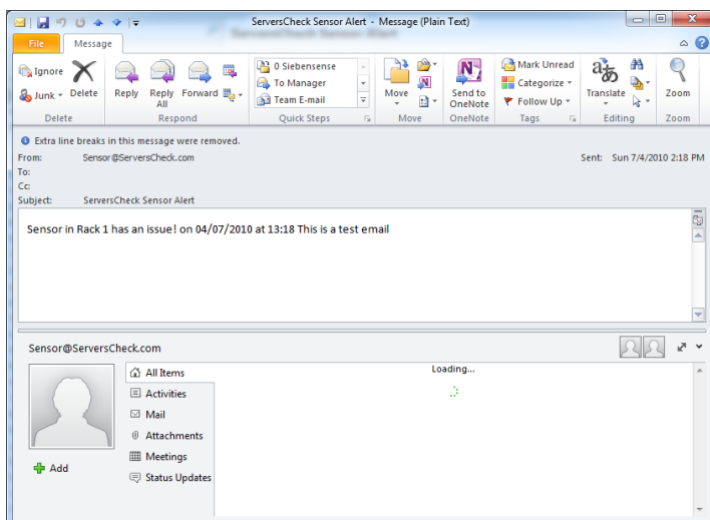
If you need to send alerts to multiple recipients, then the best option is to create a group in your mail server to send out the email alerts to multiple people.

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.



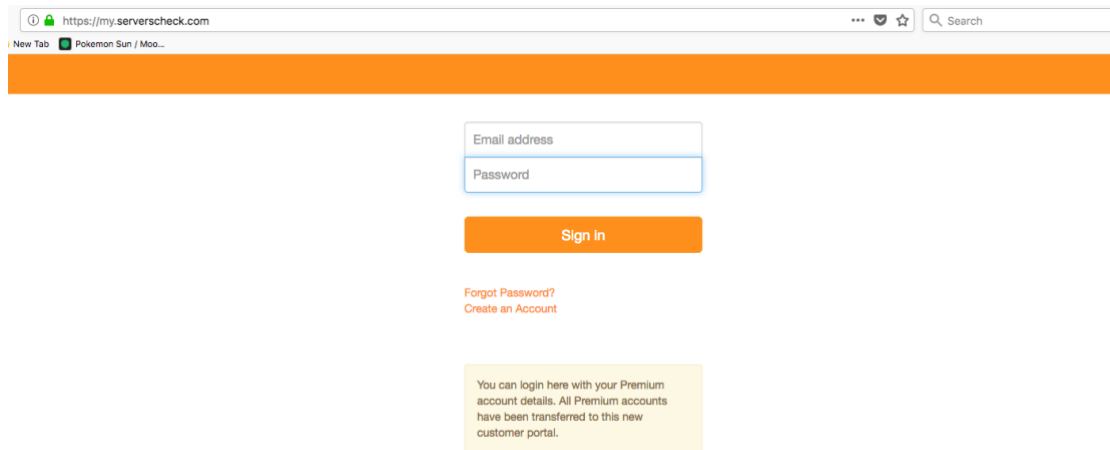
7. SMS alerting from SensorGateway

Requirements for SMS alerting:

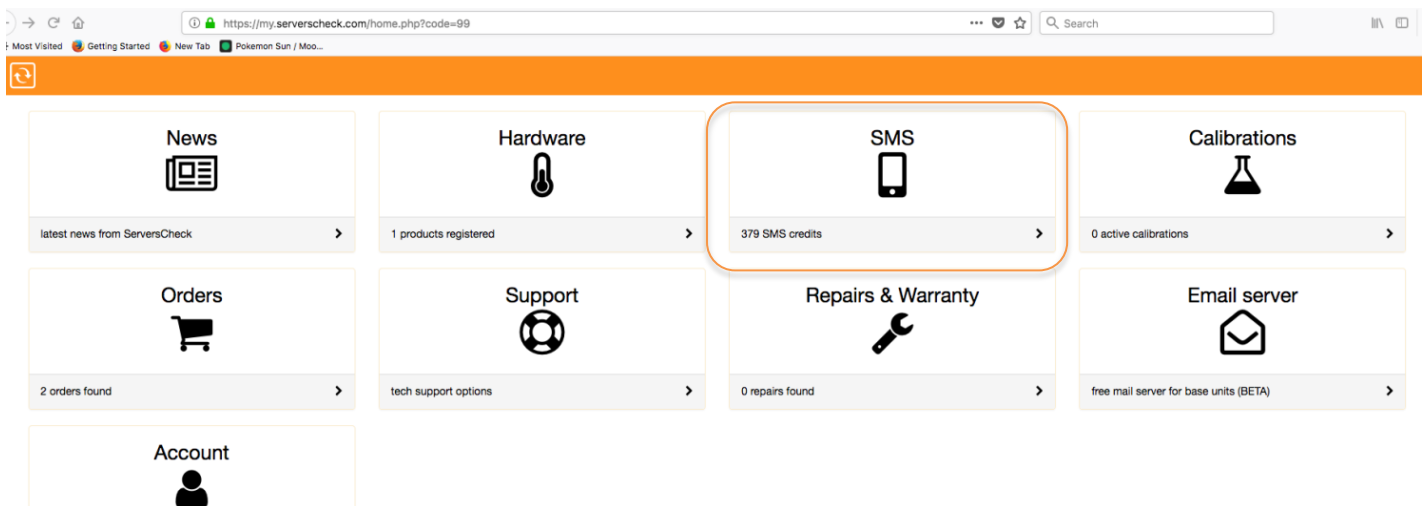
- An active account created on <https://my.serverscheck.com>
- An active Premium Plan
- Firmware 2.10 or higher on SensorGateways
- Outbound communication on port 80 from SensorGateway to Internet

For SMS alerting, SMS messages are sent by ServersCheck's SMS Gateway. SensorGateways 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.serverscheck.com>

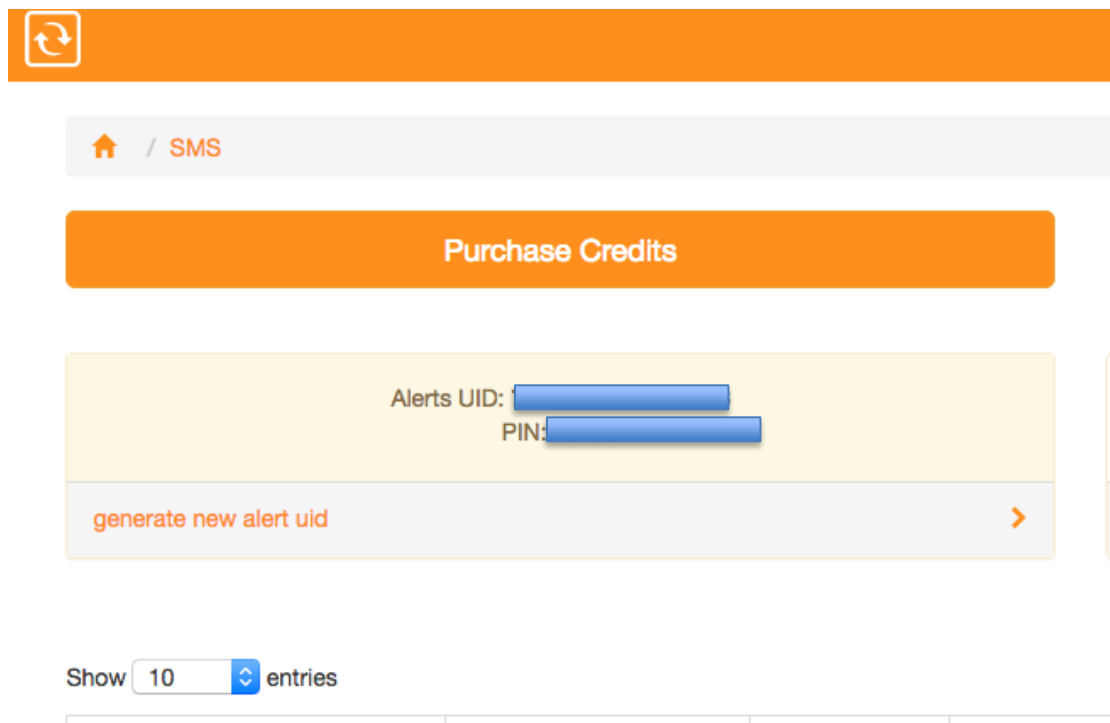


When you have completed above steps to create your account, then you will receive an email with your username and temporary password to login.



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

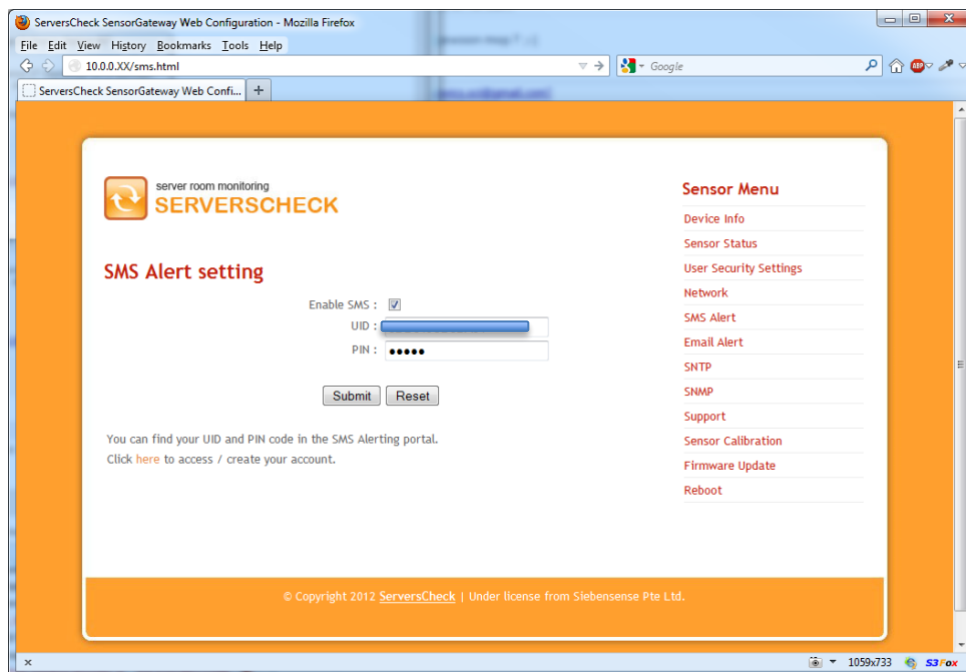
To check for the configuration and remaining SMS/Voice Call Credit we need to click on the “SMS” Icon in the middle of your Home page.



You need to note down the following configuration info: the **UID** and **PIN** codes. These have to be entered in the SensorGateway 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 SensorGateway and click on the **SMS Alert** menu option



Activate the **Enable SMS** option by clicking on the checkbox. Then enter the **UID** and **PIN** from your account page. Click on the **Submit** button

It will now send a SMS test alert to 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 SensorGateway to the ServersCheck SMS Gateway.

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SMS/Voice	SNMP Trap	Trigger Output	Set Output State To
	Internal Temp	Temp	internal temp	30.17 °C	< 15 or > 35	< 10 or > 40	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Output4	ON

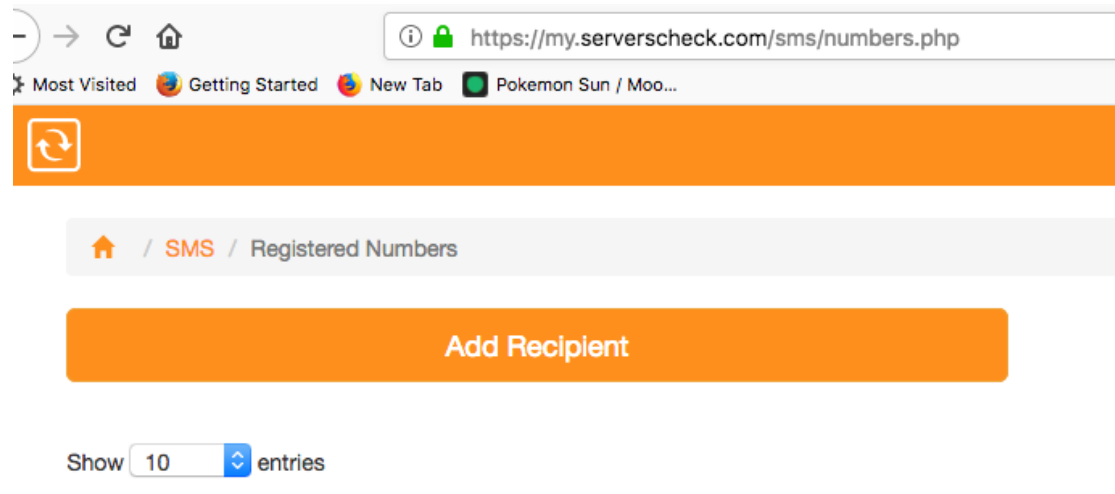
Now click on the SMS checkbox to receive alerts via SMS for the item you are monitoring.

7.1. Voice Call Alerts

Aside from SMS messages, ServersCheck 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.



Fill in the required fields


A screenshot of the 'Add a new phone number' form. The breadcrumb trail at the top reads 'SMS / Registered Numbers / Add Number'. The form has a title 'Add a new phone number'. Under the heading 'Notification type', there is a dropdown menu with options: 'Select a notification type' (selected), 'SMS Only', 'Voice Call Only', and 'SMS & Voice Call'. Below this is a 'Select a country' dropdown and a text input field for 'Your phone number'. Under the heading 'Description', there is a text input field with the placeholder text 'Example: Mike Phone'. At the bottom of the form is an orange 'Submit' button.

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
	SMS VOICE		Activation Pending	edit/a> delete
	VOICE		Active	edit/a> delete

Once activated, we'll have to go the SensorGateway'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 alert option on the "Sensor Status" page is ticked.

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SMS	SNMP Trap
	Internal Temp	Temp	Temp-Int	44.34 °C	< 18.1 or > 30.1	< 15.1 or > 40.1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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. If voice, then voice, and if both, then both.

8. Setting threshold values in the SensorGateway for alerting

Connect to the SensorGateway and click on the **Sensor Status** menu option.

The screenshot shows the 'Sensor Status' page in the ServersCheck web configuration interface. The page has an orange header with the 'SERVERSCHECK' logo and a 'Sensor Menu' sidebar on the right. The main content area contains a table with the following data:

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SNMP Trap	Del
✓	InternalTemp	Temp.	Undefined1	35.06 °C	< 18.00 ~ > 37.00	< 15.00 ~ > 41.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✗
✓	TempHum	Temp.	Undefined2	24.13 °C	< 18.00 ~ > 25.00	< 15.00 ~ > 29.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✗
✓	TempHum	Humid.	Undefined3	52.84 %RH	< 45.00 ~ > 65.00	< 40.00 ~ > 70.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✗

Below the table are 'Update' and 'Refresh' buttons. The footer of the page contains the copyright notice: '© Copyright 2010 ServersCheck | Under license from Siebensense Pte Ltd.'

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

Id: identifier of type of sensor

Type: type of reading for the sensor

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

Current 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

SNMP Trap: when checked then a SNMP Trap will be this value

Delete: removes the value from the list. It can't be undone and will require to restore to factory defaults.

9. Logging

9.1. Alert Log

Alert Log : [Download All >HERE<](#)

2013/11/26 07:00:17	Recover	temp2	25.00
2013/11/26 07:00:14	Warning	temp2	25.06
2013/11/26 07:00:05	Recover	temp2	25.00
2013/11/26 06:59:59	Warning	temp2	25.06
2013/11/26 06:59:55	Recover	temp2	25.00
2013/11/26 06:59:49	Warning	temp2	25.06
2013/11/26 06:59:46	Recover	temp2	25.00
2013/11/26 06:58:39	Recover	temp3	25.00
2013/11/26 06:58:36	Warning	temp3	25.06
2013/11/26 06:58:21	Recover	temp3	25.00
2013/11/26 06:58:17	Warning	temp3	25.06
2013/11/26 06:58:11	Recover	temp3	25.00
2013/11/26 06:57:59	Warning	temp3	25.06
2013/11/26 06:57:56	Recover	temp3	25.00
2013/11/26 06:57:46	Warning	temp3	25.06
2013/11/26 06:57:43	Recover	temp3	25.00
2013/11/25 19:48:04	Warning	temp3	25.06
2013/11/25 19:48:01	Recover	temp3	25.00
2013/11/25 19:47:36	Warning	temp3	25.06
2013/11/25 19:47:33	Recover	temp3	25.00

Alert Log
User Security Settings
Network
Email Alert
SMS Alert
SNTP
SNMP
Support
Sensor Calibration
Firmware Update
Reboot

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 SensorGateway 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*.

9.2. JSON

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 Sensorgateway and their settings.

Example:

http://192.168.1.1/probe_list.json

JSON	Raw Data	Headers
Save	Copy	

```
probe_no: 9
probe_list:
  0:
    probe_id: 1
    probe_type: 0
    sensor_name:
      0: "Int. Temp1"
      1: "Int. Ping1"
    unit_type: [2]
    alert_type: [2]
    warn_range: [2]
    down_range: [2]
    alert_setting: [2]
    output: [2]
    output_state: [2]
    default_state: [2]
    1: Object
  2:
    probe_id: 3
    probe_type: 1
    sensor_name:
      0: "Ext. Temp2"
      1: "Humidity2"
      2: "Dew Point2"
    unit_type: [3]
    alert_type: [3]
    warn_range:
      0:
```

http://IP_ADDRESS/probe_update.json

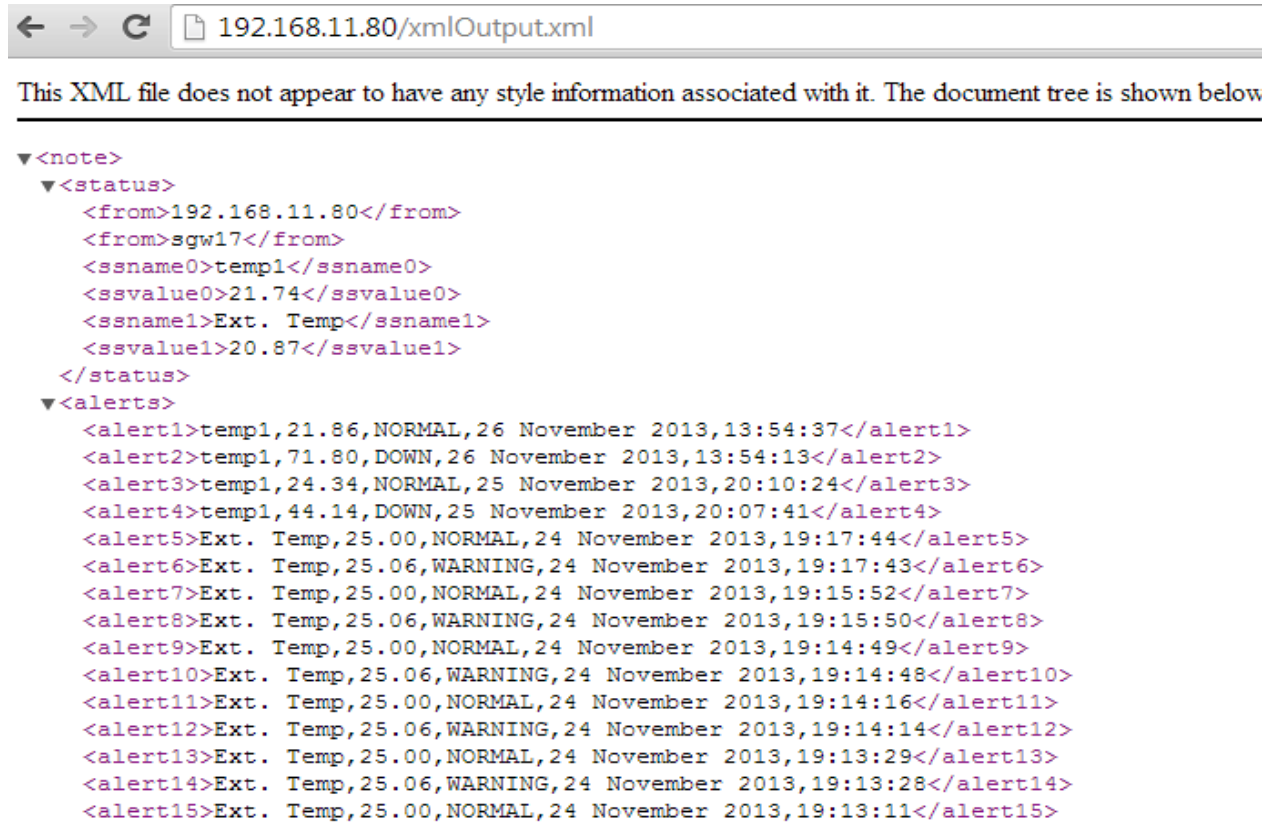
And this call returns the latest values of all the sensor probes.

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	

9.3. XML Output



This XML file does not appear to have any style information associated with it. The document tree is shown below

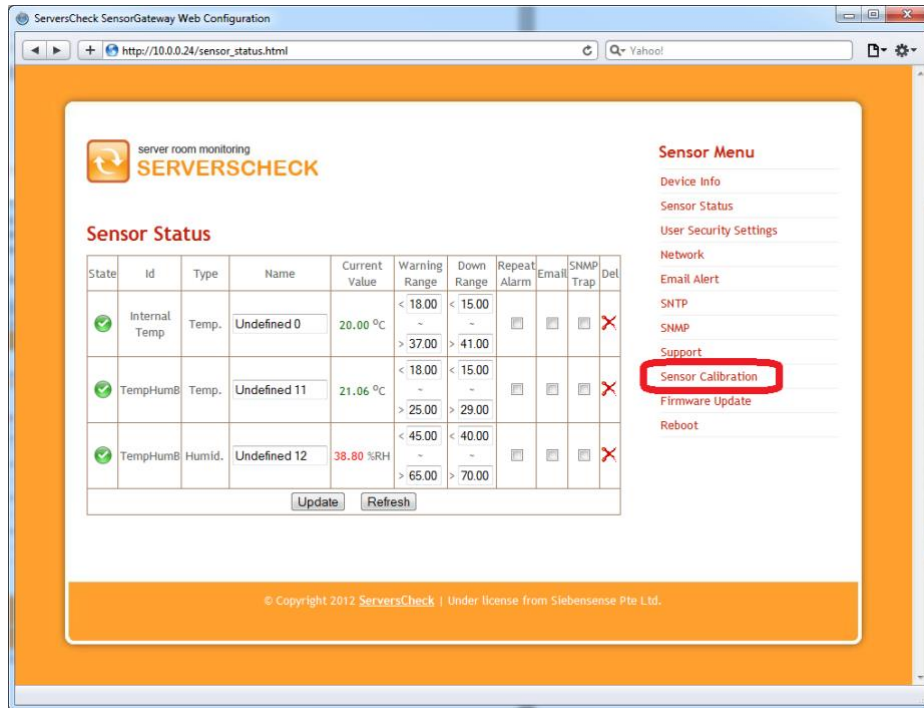
```
▼<note>
  ▼<status>
    <from>192.168.11.80</from>
    <from>sgw17</from>
    <ssname0>temp1</ssname0>
    <ssvalue0>21.74</ssvalue0>
    <ssname1>Ext. Temp</ssname1>
    <ssvalue1>20.87</ssvalue1>
  </status>
  ▼<alerts>
    <alert1>temp1,21.86,NORMAL,26 November 2013,13:54:37</alert1>
    <alert2>temp1,71.80,DOWN,26 November 2013,13:54:13</alert2>
    <alert3>temp1,24.34,NORMAL,25 November 2013,20:10:24</alert3>
    <alert4>temp1,44.14,DOWN,25 November 2013,20:07:41</alert4>
    <alert5>Ext. Temp,25.00,NORMAL,24 November 2013,19:17:44</alert5>
    <alert6>Ext. Temp,25.06,WARNING,24 November 2013,19:17:43</alert6>
    <alert7>Ext. Temp,25.00,NORMAL,24 November 2013,19:15:52</alert7>
    <alert8>Ext. Temp,25.06,WARNING,24 November 2013,19:15:50</alert8>
    <alert9>Ext. Temp,25.00,NORMAL,24 November 2013,19:14:49</alert9>
    <alert10>Ext. Temp,25.06,WARNING,24 November 2013,19:14:48</alert10>
    <alert11>Ext. Temp,25.00,NORMAL,24 November 2013,19:14:16</alert11>
    <alert12>Ext. Temp,25.06,WARNING,24 November 2013,19:14:14</alert12>
    <alert13>Ext. Temp,25.00,NORMAL,24 November 2013,19:13:29</alert13>
    <alert14>Ext. Temp,25.06,WARNING,24 November 2013,19:13:28</alert14>
    <alert15>Ext. Temp,25.00,NORMAL,24 November 2013,19:13:11</alert15>
```

The log can be accessed by appending *xmlOutput.xml* at the end of the SensorGateway'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.

10. Sensor Calibration

A unique feature of the ServersCheck SensorGateway and external probes is that the SensorGateway 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, click on the **SensorCalibration** menu option of the main screen.



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

Sensor Calibration

Sensor Type	Example Value	Operator	Offset value
InternalTemp	35.09 °C	+ ▼	8.00
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	5.00	-	5.00
Humidity Threshold	0.00	-	0.00
<input type="checkbox"/> Sync. Internal-External Temp.			
<input type="button" value="Update"/> <input type="button" value="Reset"/>			

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

10.1. Tolerance level

Sensor Calibration

Sensor Type	Example Value	Operator	Offset value
InternalTemp	35.09 °C	+ ▼	8.00
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	5.00	-	5.00
Humidity Threshold	0.00	-	0.00

Sync. Internal-External Temp.

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.

11. Factory resetting of SensorGateway

11.1. SensorGateways v1 and v2

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



You can always hard reset the SensorGateway to its default factory settings as follows.

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



- 1) Plug in power adapter or PoE cable
- 2) 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.
- 3) Wait until the yellow LED doesn't blink anymore
- 4) Reconnect to the SensorGateway's web interface at <http://192.168.11.160>

11.2. SensorGateways v3 and v4

Following only applies to SensorGateways 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 SensorGateway to its default factory settings as follows.

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 cable
- 3) Push the **Reset** button
- 4) While the **Reset** button is pushed, plug in the power adapter or PoE Cable
- 5) After 10 seconds the Green & Yellow led's will be on steady (not blinking)
- 6) Remove power adapter or PoE cable
- 7) Wait 3 seconds
- 8) Plug in power adapter or PoE cable
- 9) After a few seconds both Green & Yellow led's are blinking
- 10) Reconnect to the SensorGateway's web interface at <http://192.168.11.160>

11.3. SensorGateway v5

Following only applies to SensorGateways v5

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

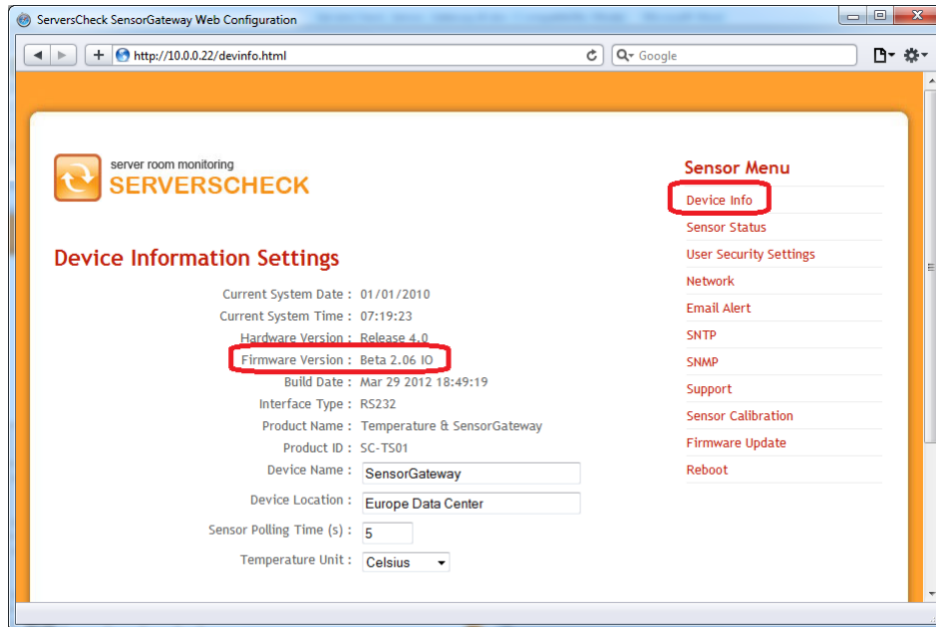


- 1) Remove the external sensor probe
 - 2) Remove the power adapter or PoE powered network cable
 - 3) Push the **Reset** button
 - 4) While the **Reset** button is pushed, plug in the power adapter or PoE powered network cable
 - 5) Hold it for 15 seconds before releasing it. The yellow LED should be blinking fast.
 - 6) Wait until the yellow LED is not blinking fast anymore.
 - 7) On the LED display, the Sensorgateway 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 Sensorgateway will reboot. After a few seconds both Green & Yellow led's should be flashing slowly.
 - 11) The base unit will reset by loading to the firmware 3.2; it might not have an OLED display active
 - 12) Reconnect to the SensorGateway'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://serverscheck.com/support/downloads.asp>
- (Refer to section 1.3)**

12. Updating the firmware of the SensorGateway

ServersCheck may release from time to time new firmware versions for its SensorGateways.

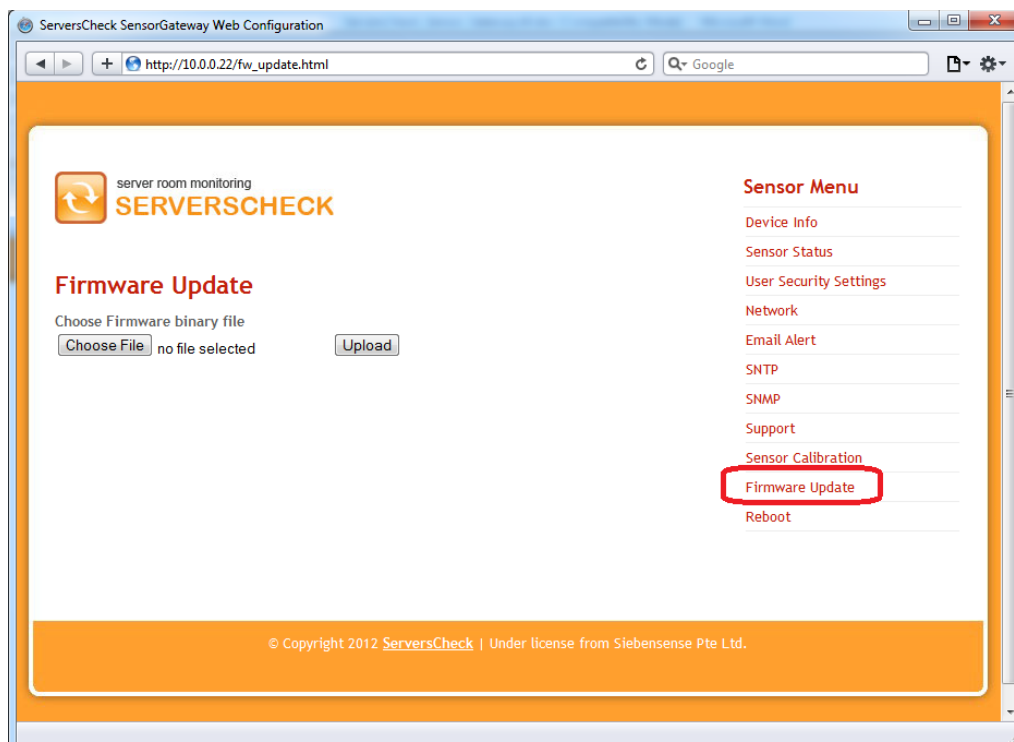
You can check your currently installed firmware version by going to your SensorGateway and then clicking on **Device Info**



Go to <http://www.serverscheck.com/sensors/firmware.asp> to check for new firmware releases. Simply check on that page the latest firmware version available for your SensorGateway

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

Click on the **Firmware Update** menu option and then click on the **Choose File** button to locate the downloaded firmware file. Only then click on the **Upload** button.



Your SensorGateway will now start loading the new firmware. Your SensorGateway will be available on <http://192.168.11.160> after the firmware update has been completed

Should the upgrade fail and should the SensorGateway be unresponsive then perform a factory reset as described in section 11 of this document.

12.1. SensorGateway's LED table



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

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 SensorGateway 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

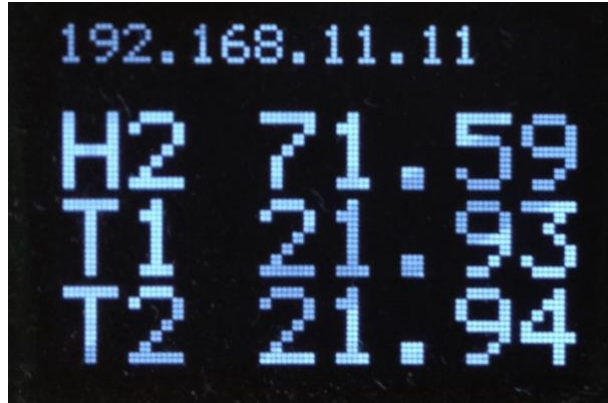
C. Normal Power on Reset, No New Firmware Uploaded

- a) Power ON state: Yellow & Green LED are ON for 2 seconds and start flashing
- b) 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

d. Reboot, New Firmware Uploaded

- a) Power ON state: Yellow & Green LEDs are ON for 1 second and Yellow LED starts flashing
- b) Updating firmware state: takes around 20 seconds
 - Green LED stays ON
 - Yellow LED will flash very fast (about 1/10 seconds)
- c) 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

12.2. OLED Display Subscripts



The OLED display gives one a quick view of the values the SensorGateway is reading. The reference for the order of the subscript numbering is completely dependent on how the web page is showing it. In the photos displayed, the T1 value is referred to be temp1 while T2 is temp3.

✓	Internal Temp	Temp	temp1	21.99 °C
✓	Temperature	Temp	temp3	21.94 °C

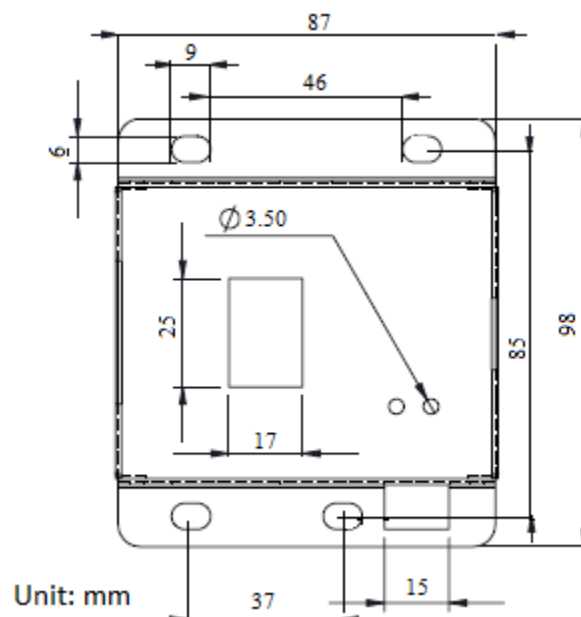
12.3. Rack mounting the SensorGateway

The SensorGateway is an 0U device that can be easily and securely mounted in a rack using standard rack mount screws with Phillips head. 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.



12.4. Dimensions of the sensor gateway



13. Industrial Sensor

13.1. The IO Sensor Probe – 16 Dry Contacts IN & 4 OUT

13.2. General Description

The IO sensor probe is a 16 zone expander for the Sensorgateway 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 SensorGateway is supported and can only be plugged directly in one of the ports of your gateway.

13.3. Specifications

SENSOR TYPE:	HARDWIRED, OPEN / CLOSED
OPERATING POWER SUPPLY:	power supply comes from the Sensorgateway
AUXILLARY SUPPLY:	maximum current capacity of 700mA at 12 VDC
NUMBER OF INPUTS:	16
NUMBER OF OUTPUTS:	4
INDICATOR RANGE:	OK / TRIG
POLLING RATE:	can be set from 1 to 5 seconds
COMMUNICATION CABLE:	RJ45 TO RJ45 connector to the Sensorgateway

13.4. 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

13.5. Terminal Description



TERMINAL BLOCKS

DI1 to DI16 : 16 digital inputs
DO1 to DO4 : 4 digital outputs
+12V : 12 VDC supply
GND : supply ground

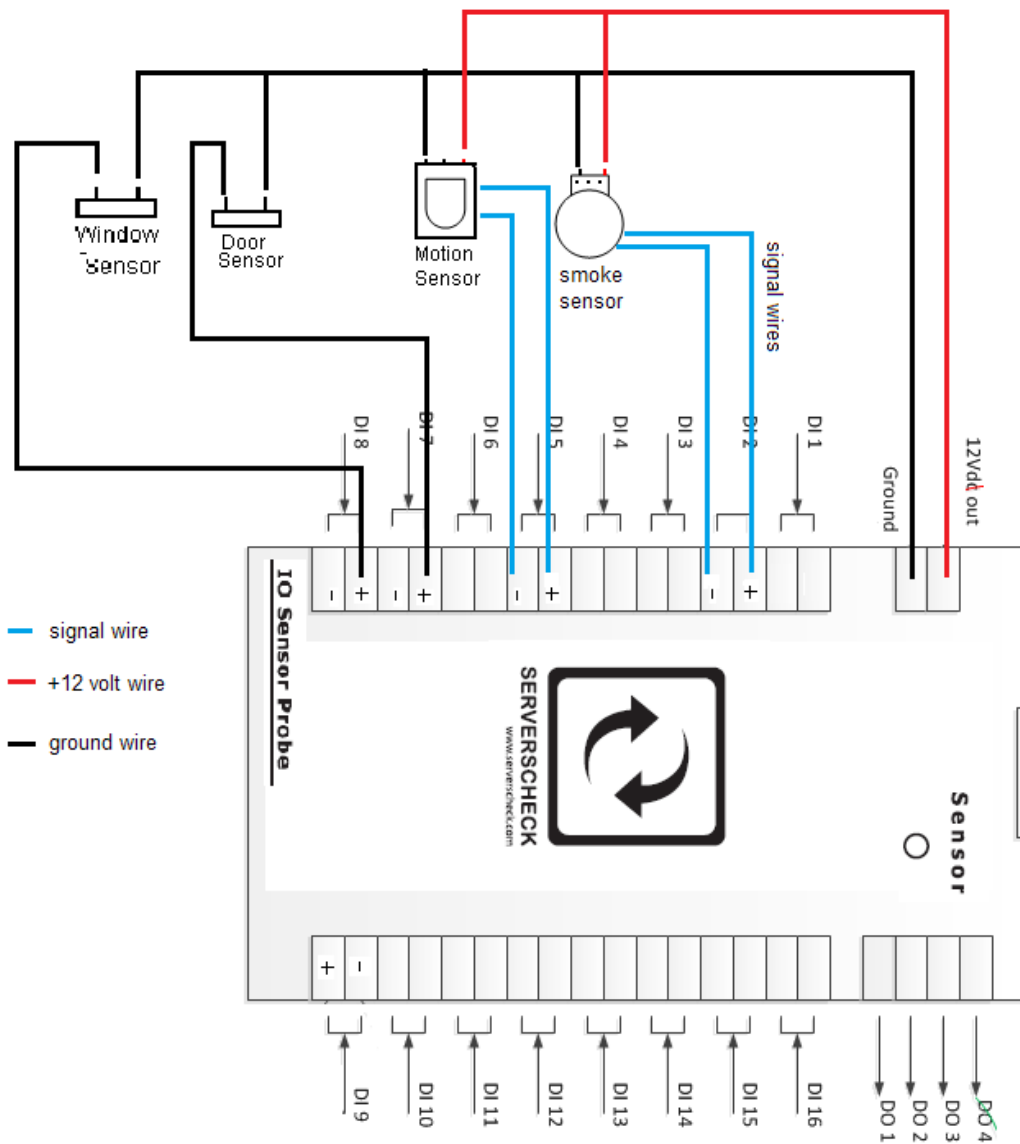
13.6. Mounting instructions

The IO sensor probe is a device that can be easily and securely mounted in a rack using standard rack mount screws with Phillips head. Although one screw is sufficient to hold the whole equipment in place, a second one improves stability.

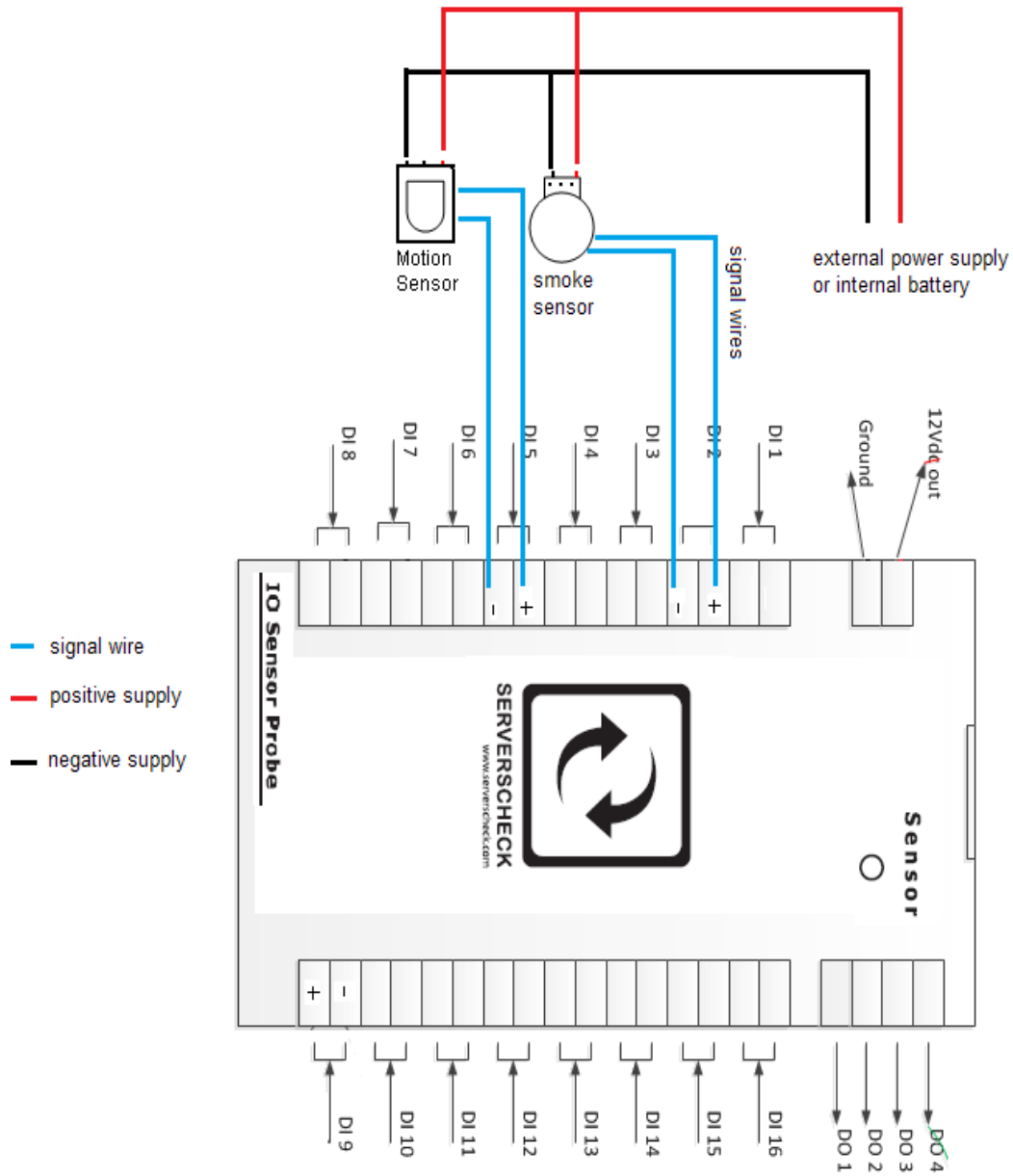
Typically the sensors are mounted at the rear of the rack where ample place is available so that it doesn't use any space reserved for server and other network rack mounted equipment.

13.7. Basic Wiring Diagram

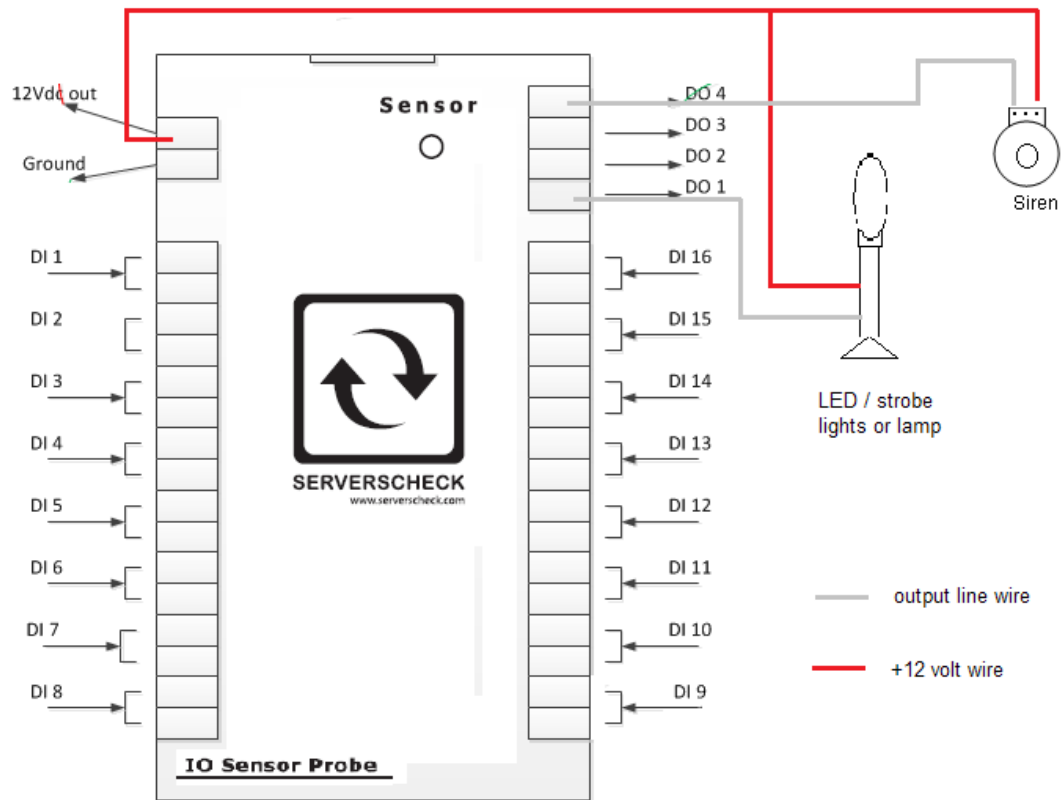
INPUTS: if sensors are getting their power supply from the IO sensor probe



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



13.8. SensorGateway IO Sensor Probe Interface

Output Control

State	Id	Type	Name	Current Value	Default State	Control Output
	IO Sensor	Output	Output1	OFF	OFF ▼	CYCLE
	IO Sensor	Output	Output2	OFF	OFF ▼	CYCLE
	IO Sensor	Output	Output3	ON	OFF ▼	CYCLE
	IO Sensor	Output	Output4	ON	OFF ▼	CYCLE

|

Input Status

Status	DI	Name	Value	Time(ms)	Normal State	Repeat Alarm	Email	SMS	SNMP Trap	Trigger Output	Set Output State To
	1	UndefinelO test 1	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Output4 ▼	ON ▼
	2	UndefinelO 2	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	3	UndefinelO 3	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	4	UndefinelO 4	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	5	UndefinelO 5	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	6	UndefinelO 6	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	7	UndefinelO 7	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	8	UndefinelO 8	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	9	UndefinelO 9	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	10	UndefinelO 10	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	11	UndefinelO 11	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	12	UndefinelO 12	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	13	UndefinelO 13	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	14	UndefinelO 14	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	15	UndefinelO 15	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
	16	UndefinelO 16	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼

|

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 switch the button on and then off or vice versa depending on the default state.

NAME

- is used to assign a name to a zone or sensor (ie .. 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.

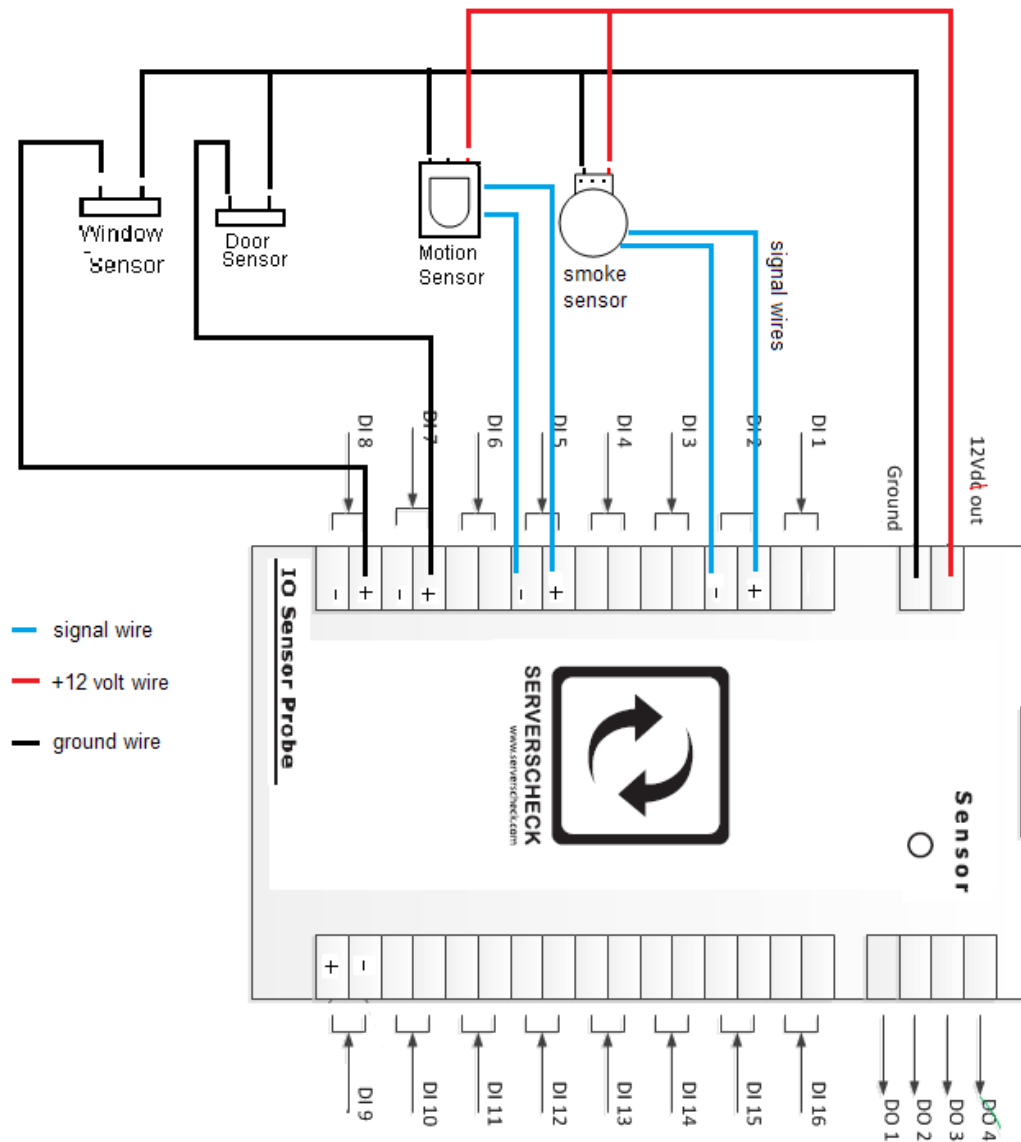
ALWAYS CLICK "UPDATE" AFTER EVERY CHANGE IN VALUES/PARAMETERS for changes to take effect

13.9. Wiring configuration and settings (anti tampering)

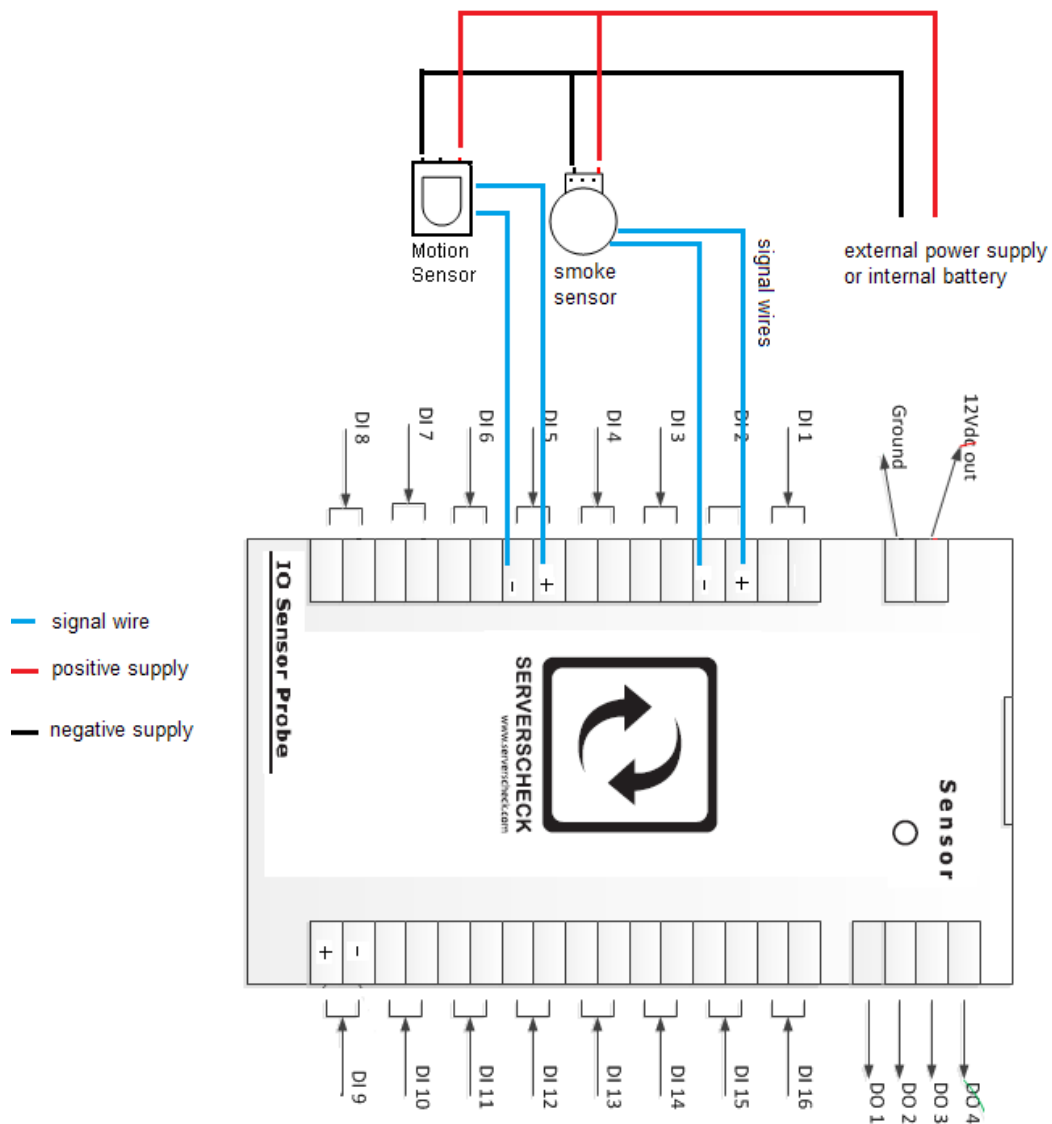
The IO sensor probe does not have the ability to give out specifically a “tamper” alert. But it can be wired and set to give out a “normal” alert if ever a power supply wire or a signal wire was cut off in which case the monitoring team must still attend to.

Basic wiring diagram for Inputs still applies

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



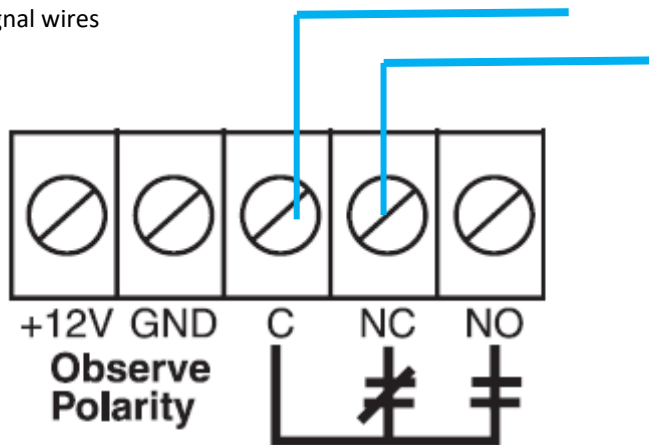
INPUTS: if sensors are getting their power supply from an external source or internal battery



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

signal wires



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)

13.10. I/O Probe Interface

Output Control

State	Id	Type	Name	Current Value	Default State	Control Output
✓	IO Sensor	Output	Output1	OFF	OFF ▼	CYCLE
✓	IO Sensor	Output	Output2	OFF	OFF ▼	CYCLE
✓	IO Sensor	Output	Output3	ON	OFF ▼	CYCLE
✓	IO Sensor	Output	Output4	ON	OFF ▼	CYCLE

Update | Reset

Input Status

Status	DI	Name	Value	Time(ms)	Normal State	Repeat Alarm	Email	SMS	SNMP Trap	Trigger Output	Set Output State To
✓	1	UndefineIO test 1	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Output1 ▼	ON ▼
✓	2	UndefineIO 2	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	3	UndefineIO 3	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	4	UndefineIO 4	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	5	UndefineIO 5	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	6	UndefineIO 6	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	7	UndefineIO 7	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	8	UndefineIO 8	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	9	UndefineIO 9	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	10	UndefineIO 10	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	11	UndefineIO 11	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	12	UndefineIO 12	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	13	UndefineIO 13	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	14	UndefineIO 14	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	15	UndefineIO 15	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	16	UndefineIO 16	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼

Update | Reset

The IO sensor probe will be triggered if it detects a “Close circuit” from the Digital Inputs DI1 because its Normal State is configured as Open and vice versa. The sensors are wired in which it will output an “open circuit” if any of them were triggered. Thus, triggering the IO sensor probe a normal alert on that particular zone/sensor

As based on the image above if test 1 is the main AC unit and Output1 is the reserved AC unit when the main AC goes down it is set to trigger reserve AC unit to ON.

If any one of the power supply wire is cut (or both), the dry contact terminal will go to an “open circuit” state . Thus, triggering the IO sensor probe a normal alert on that particular zone/sensor where power was removed

It may not be a “tamper” alert but its is still an alert that will signal a monitoring system that an anomaly has occurred and needs to be checked

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

13.11. 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.

Output Control

State	Id	Type	Name	Current Value	Default State	Control Output
✓	IO Sensor	Output	Output1	OFF	OFF ▼	CYCLE
✓	IO Sensor	Output	Output2	OFF	OFF ▼	CYCLE
✓	IO Sensor	Output	Output3	ON	OFF ▼	CYCLE
✓	IO Sensor	Output	Output4	ON	OFF ▼	CYCLE
<input type="button" value="Update"/> <input type="button" value="Reset"/>						

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.

Sensor Status

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SMS/Voice	SNMP Trap	Trigger Output	Set Output State To
✓	Internal Temp	Temp	internal temp	30.17 °C	< 15 or > 35	< 10 or > 40	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Output4 ▼	ON ▼
✓	Water Detect	Water Detect	Water Detect	DRY	-	SET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE	- ▼
✓	Power fail meter	Power fail meter	PowerFail 2	OK	-	SET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Output3	- ▼
✓	Security Probe	Security	Security 3	OK	-	CLOSE ▼	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Relay1 Relay2	ON ▼
✓	Sound Pressure	Sound	Sound Meter	53.15 dB	< 30 or > 80	< 20 or > 85	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	Shock Sensor	Shock Sensor	Shock5	0.89 G	< 0.7 or > 2	< 0.6 or > 2.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	Dust Sensor	Dust	Dust Sensor	0 mg/M ³	> 0.2	> 0.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼

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

14. Security Sensors

14.1. General Description

ServersCheck'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.



On the following photos, it is good to keep in mind that the connection from the sensor to the SensorGateway remains the same. For more information, refer to section 2.

14.2. View of Door Sensor



14.3. View of Motion Sensor

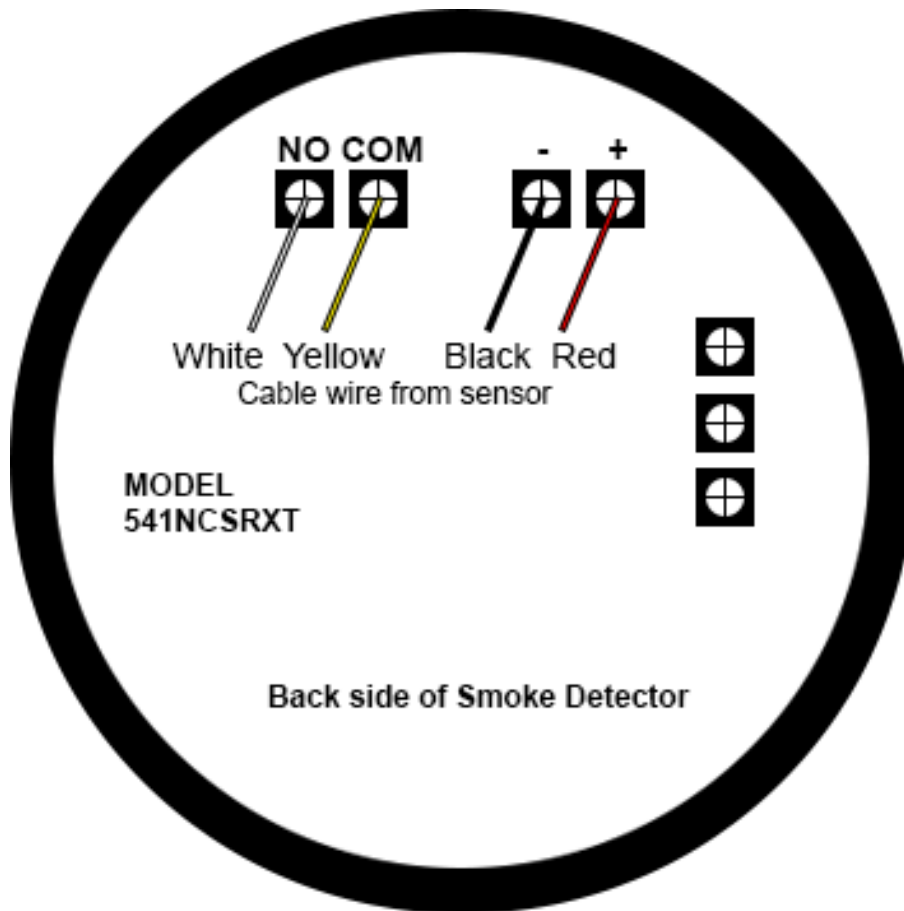


14.4. View of Smoke Sensor



14.4.1. 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 Wire: Connect to the Common terminal of the Smoke Detector.
4. White Wire: Connect to the Normally Open Terminal of the Smoke Detector.

14.4.2. How to turn off Alarm after Smoke Detection.

Disconnect the rj45 cable connecting the smoke sensor from the SensorGateway or SensorHub

14.5. Sound Sensor

With the data center demanding a very conducive environment for the services it provides, we know that the people making all those possible needs to be safeguarded as well from any anomaly-producing situations.

This sensor probe measures sound levels in decibels (dB) which allows you to be notified from a number of noise-producing deviations within your data center. Maximum level allowed is up to 100 dB.



15. The Sensor hub

15.1. General Description

The sensor hub is a port expander attachment / peripheral for the SensorGateway 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



15.2. Specifications

EXPANSION PORTS :	up to 8 sensor probes
OPERATING POWER SUPPLY:	power supply comes from the SensorGateway
AUXILLARY SUPPLY:	maximum current capacity of 500mA at 9 to 12 VDC
NUMBER OF INPUTS:	4 (dry contacts)
NUMBER OF OUTPUTS:	4 (digital) and 2 relay outputs
POLLING RATE:	can be set from 1 to 5 seconds
COMMUNICATION CABLE:	2 RJ45 cable to the SensorGateway

15.3. Probe Restrictions

- must not be connected with IO sensor probe
- must not be connected with wireless probe
- must not be connected with QoS probe

15.4. Connecting the SensorHub to the SensorGateway

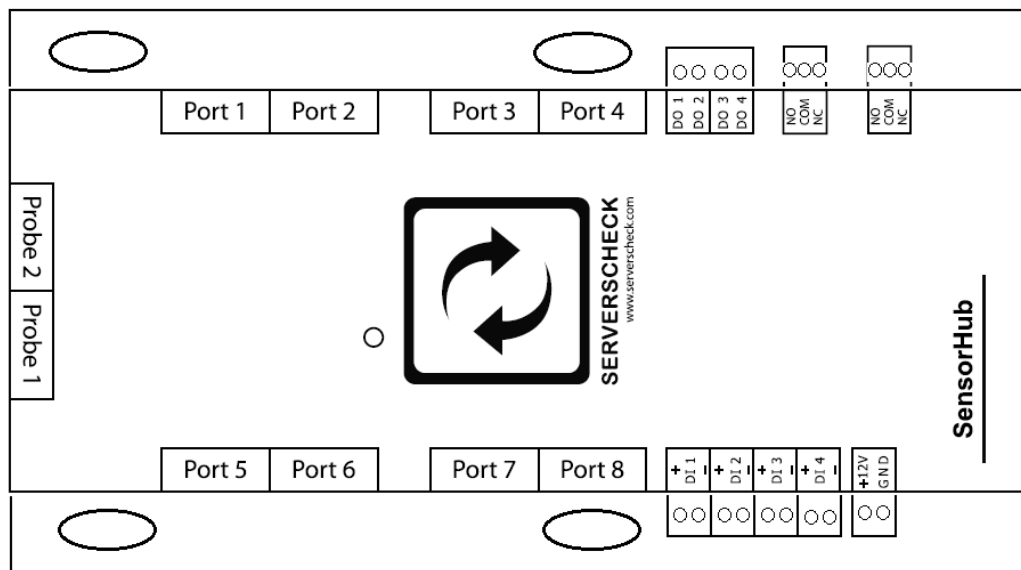


The sensor hub connects through regular RJ45 cables to the SensorGateway. The unit is shipped with 2 short RJ45 cables and a mask plate. You can use longer RJ45 cables if a longer distance is needed.

Plug the first RJ45 cable from on port 1 of the Sensor Hub and on port 1 of the SensorGateway
Then plug in the second RJ45 cable on port 2 of the Sensor Hub and on port 2 of the SensorGateway
If you use the short RJ45 cables shipped with the Sensor Hub, then slide the metal mask plate over the SensorHub and SensorGateway as shown in above picture and the picture below.



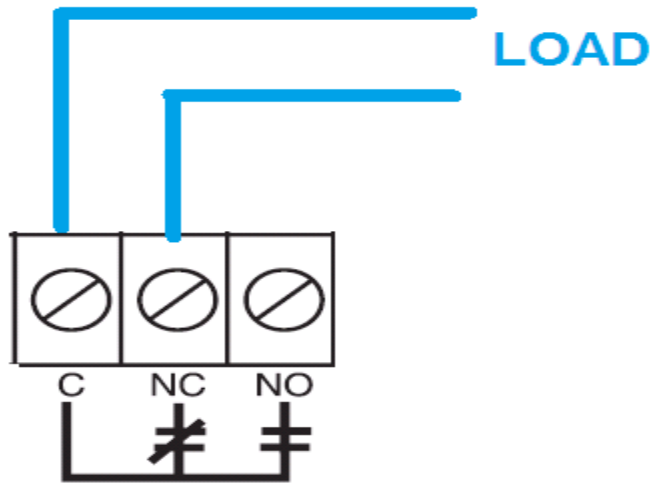
15.5. 25.5. Terminal Connections



PROBE 1 AND PROBE 2:	connect to SensorGateway 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

15.6. 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)

15.7. Sensorhub web interface

Expansion of Probes

Sensor Status

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SMS/Voice	SNMP Trap	Trigger Output	Set Output State To
✓	Internal Temp	Temp	internal temp	30.29 °C	< 15 or > 35	< 10 or > 40	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Output4	ON
✓	Water Detect	Water Detect	Water Detect	DRY	-	SET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE	-
✓	Power fail meter	Power fail meter	PowerFail 2	OK	-	SET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE	-
✓	Security Probe	Security	Security 3	OK	-	CLOSE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Relay1	ON
✓	Sound Pressure	Sound	Sound Meter	54.04 dB	< 30 or > 80	< 20 or > 85	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE	-
✓	Shock Sensor	Shock Sensor	Shock5	0.88 G	< 0.7 or > 2	< 0.6 or > 2.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE	-
✓	Dust Sensor	Dust	Dust Sensor 6	0 mg/M ³	> 0.2	> 0.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE	-
✓	Temperature	Temp	Ext. Temp 7	28.37 °C	< 15 or > 35	< 10 or > 35	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Relay1	OFF
✓	Humidity	Humidity	Humidity 7	61.15 %RH	< 50 or > 80	< 45 or > 85	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE	-
✓	Dew Point	Dew Point	Dew Point 7	20.6 °C	< 12 or > 25	< 10 or > 35	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE	-
✓	Air Flow	Air FLOW	Airflow1	40 m/s	< 1.5	< 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE	-

Update | Reset

- [Alert History](#)
- [Cloud](#)
- [User Security Sett](#)
- [Wired Network Settings](#)
- [Email Alert](#)
- [SMS & Voice Call](#)
- [SNTP](#)
- [SNMP](#)
- [Support](#)
- [Sensor Calibration](#)
- [Firmware Update](#)
- [Reboot](#)

INPUTS AND OUTPUTS

Output Control

State	Id	Type	Name	Current Value	Default State	Control Output
✓	IO Sensor	Output	Output1	OFF	OFF	CYCLE
✓	IO Sensor	Output	Output2	OFF	OFF	CYCLE
✓	IO Sensor	Output	Output3	ON	OFF	CYCLE
✓	IO Sensor	Output	Output4	ON	OFF	CYCLE
✓	IO Sensor	Relay	Relay1	ON	OFF	CYCLE
✓	IO Sensor	Relay	Relay2	OFF	OFF	CYCLE

Update | Reset

Input Status

Status	DI	Name	Value	Time(ms)	Normal State	Repeat Alarm	Email	SMS	SNMP Trap	Trigger Output	Set Output State To
✓	1	UndefinedIO test1	OK	500	Open	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Output1	ON
✓	2	UndefinedIO test2	OK	500	Open	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Output2	ON
✓	3	UndefinedIO test3	OK	500	Open	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relay1	ON
✓	4	UndefinedIO test4	OK	500	Open	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relay2	ON

Update | Reset

We will discuss triggering outputs in the next chapter, section 26.

16. The Multi-Sensor and Hub



16.1. General Description

The Multi-Sensor and Hub was originally designed for monitoring remote distributed network hubs for the IDA Smart Nation project in Singapore, the Multi-Sensor & Hub is the result of a long analysis of what a sensor box should be able to monitor inside a server room or remote cabinet.

The unique device is an expansion hub for our Sensorgateways, the base unit. The base unit plugs into this device so that you have all into one housing.

The unit features 9 sensor metrics on board that are most commonly required for monitoring remote cabinets and smaller server rooms.

The unit also features 8 dry contact inputs for legacy sensors and equipment. It also features 4 dry contact outputs allowing you to control 3rd party equipment such as HVAC units, generators, etc.




And the device is a sensor hub: you can expand the device with up to 5 additional sensors: 4 digital sensors and 1 analog sensor.

16.2. Built-in Sensors

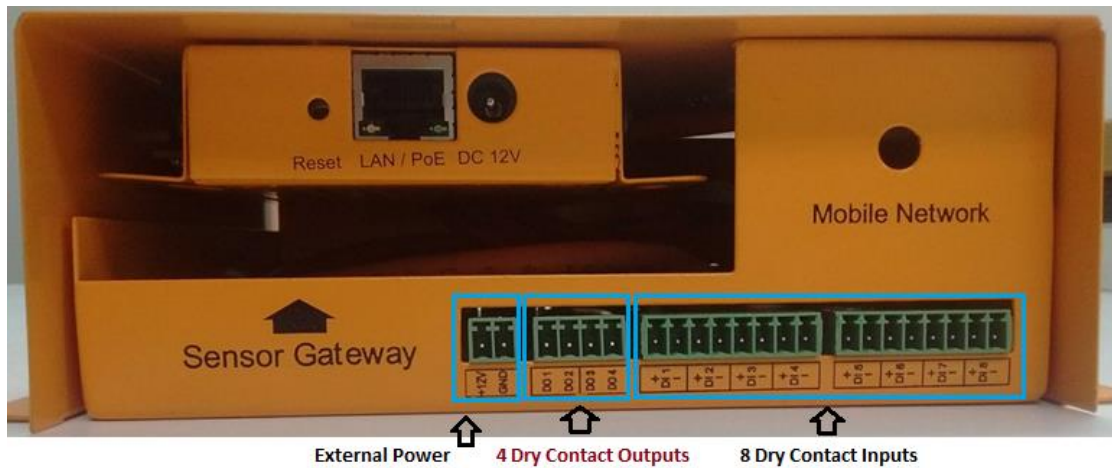
The device is preloaded with 9 sensor metrics:

- Temperature
- Humidity
- Dew Point
- Shock
- Sound
- Motion
- CO (Carbon Monoxide)
- Power Failure
- Luminosity (light in Lux)

16.3. Technical Specifications

	<p>Expansion ports for external sensor and 1 analog sensor</p> <p>Dry contact input ports: 8</p> <p>Dry contact output ports: 4 (digital sink 100mA)</p> <p>Auxillary supply: maximum current 9 to 12 VDC</p> <p>Power consumption: 650 milliWatts</p> <p>Dimensions: 160 mm (6.3") x 165 mm (6.5") x 60 mm (2.4")</p> <p>Weight:</p> <p>Housing: Orange metal casing with one LED status indicators</p> <p>Operating temperature range: 0°C to +70°C in PoE mode</p> <p>Requires the Sensorgateway v5</p> <p>Specifications of on board sensors:</p> <p>Temperature Resolution: 0.1°C (0.18)°F precision</p> <p>Temperature Accuracy: +/- 0.5°C (+/- 0.9 °F) over 0°C to +60°C</p> <p>Readings in Celsius or Fahrenheit</p> <p>Relative Humidity Measurement Range: 0 to 100 % RH</p> <p>Relative Humidity Resolution or precision: 0.1 % RH and 1 % RH</p> <p>Relative Humidity Accuracy: +/- 4 % RH and +/- 2 % RH above 90 % RH</p> <p>Relative Humidity Long Term Stability: < 1 % RH/year</p> <p>Sound (db) Resolution: 1 db precision</p> <p>Luminosity Resolution: 0.5 Lux precision</p> <p>Vibration unit: G force</p> <p>Minimum value: 1G</p>	<p>sensor</p> <p>capacit</p> <p>+7</p>
	<p>Sensor connects to & is managed Requires the latest generation of Sensorgateway (v5.1)</p> <p>Communication protocols to probe</p>	<p>managed</p> <p>probe</p>
	<p>Connects via regular straight distance between RJ45 cable probe</p>	<p>probe</p>

16.4. Terminal Description



TERMINAL BLOCKS

DI1 to DI8 : 8 Digital Inputs

DO1 to DO4 : 4 Digital Outputs

+12V : 12 VDC Supply

GND : Supply Ground



5 External Sensor Ports

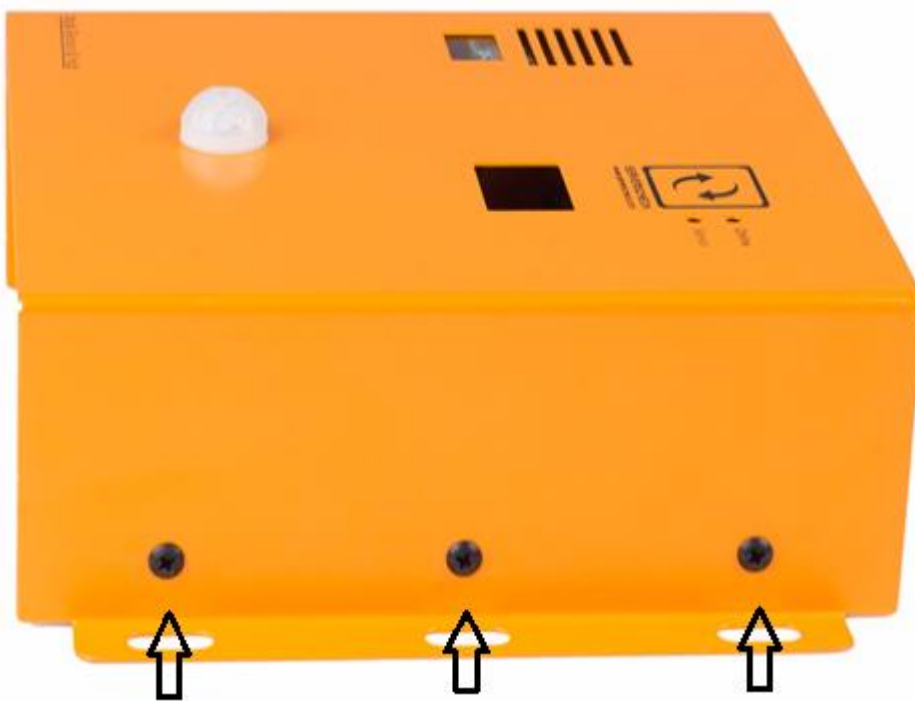
Ports 1 to 4 : High Speed Ports. Any ServerCheck Sensor can be connected as an additional option

Port 5 : Dedicated port for **Flooding Sensor**

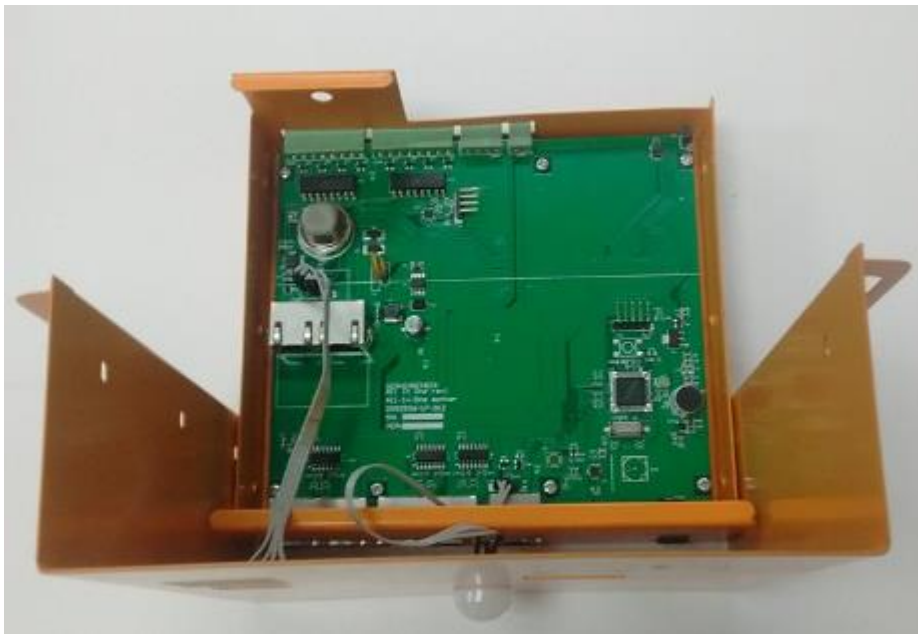
Power Failure Sensor : Dedicated plug for the Power Failure Sensor Probe

16.5. Connecting The Sensor Gateway

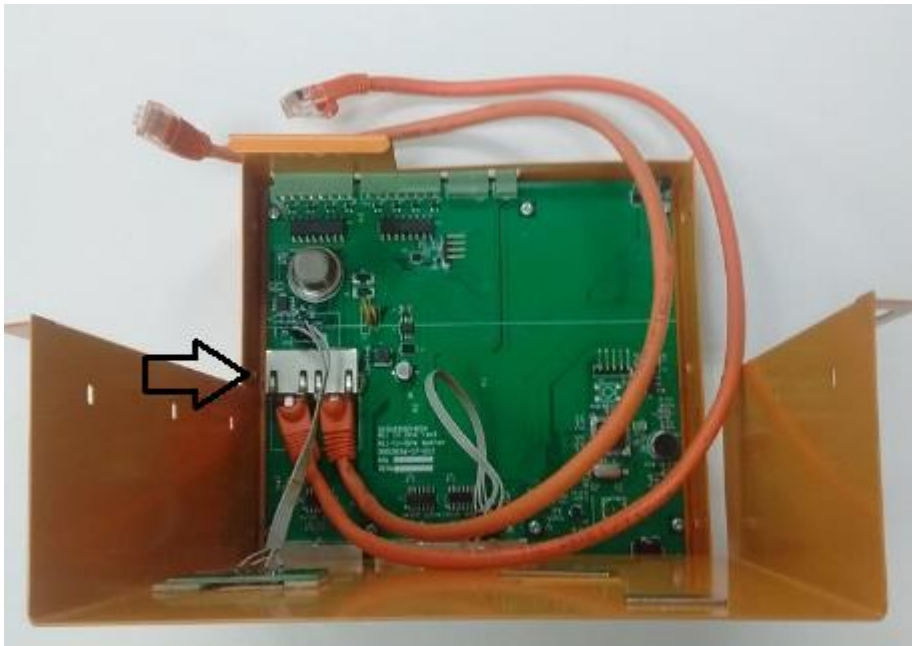
1. Remove screws connected on both sides of the MultiSensor and Hub casing.



2. Open the box similar to the image below.



3. Connect 2 RJ 45 Cables to the ports on the MultiSensor and Hub.



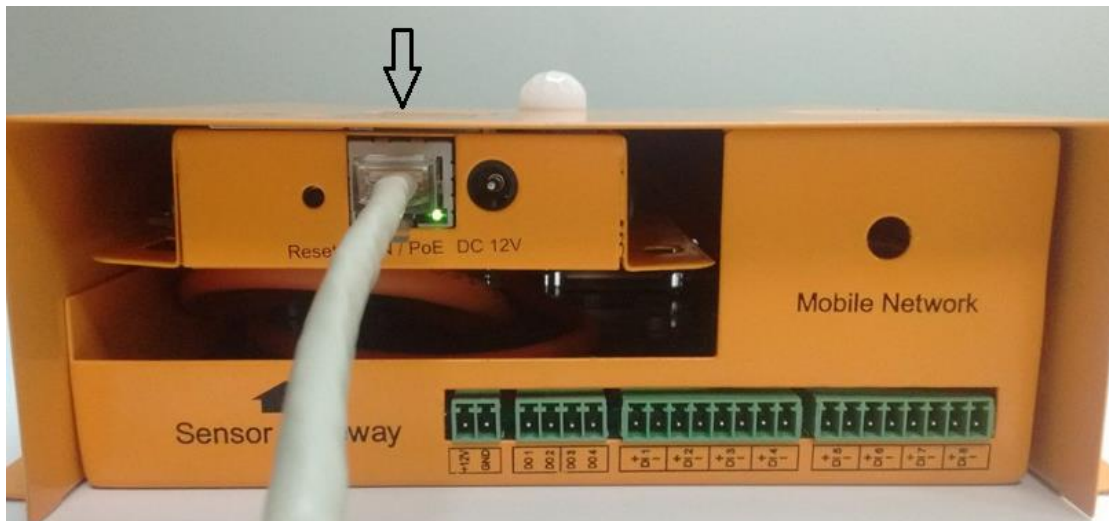
4. Connect the other ends to the Probe1 and Probe 2 of the SensorGateway.



5. Adjust the SensorGateway with the magnets to fit into the screen hole.



6. Connect your network connection to the LAN port of the SensorGateway.



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.

16.6. Multi-Sensor and Hub Web Interface

1. Sensor Status - this will show you the values for the Internal Temperature Sensor of the SensorGateway plus 9 sensors included with the device.

Sensor Status

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SMS/Voice	SNMP Trap	Trigger Output	Set Output State To
	Internal Temp	Temp	Int. Temp	29.79 °C	< 19 or > 35	< 16 or > 40	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
	Air Flow	Air FLOW	Airflow1	0 m/s	< 1 or > 25	< 0.5 or > 29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
	Temperature	Temp	Ext. Temp1	29.25 °C	< 18 or > 25	< 15 or > 29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
	Humidity	Humidity	Humidity1	72.75 %RH	< 45 or > 65	< 40 or > 70	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
	Dew Point	Dew Point	Dew Point1	23.8 °C	< 18 or > 25	< 15 or > 29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
	Thermal Low	Temp	Ext. Temp2	33.79 °C	< 18 or > 25	< 15 or > 29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
	Thermal High	Temp	Ext. Temp3	39.88 °C	< 18 or > 25	< 15 or > 29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
	Dust Sensor	Dust	Dust Sensor1	0 mg/M ³	> 0.2	> 0.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
	Power Fail	Power	PowerFail1	PWR Fail	-	SET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
	Shock Sensor	Shock Sensor	Shock1	0.84 G	< 0.7 or > 1.2	< 0.5 or > 1.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▾	- ▾
					Update	Reset						

2. Output Control

Output Control

State	Id	Type	Name	Current Value	Default State	Control Output
	IO Sensor	Output	Output1	OFF	OFF ▾	CYCLE
	IO Sensor	Output	Output2	OFF	OFF ▾	CYCLE
	IO Sensor	Output	Output3	OFF	OFF ▾	CYCLE
	IO Sensor	Output	Output4	OFF	OFF ▾	CYCLE
	IO Sensor	Relay	Relay1	OFF	OFF ▾	CYCLE
	IO Sensor	Relay	Relay2	OFF	OFF ▾	CYCLE
				Update	Reset	

3. Input Status

Input Status

Status	DI	Name	Value	Time(ms)	Normal State	Repeat Alarm	Email	SMS	SNMP Trap	Trigger Output	Set Output State To
	1	UndefinedIO 1	OK	500	Open ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Output3 ▾	ON ▾
	2	UndefinedIO 2	OK	500	Open ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Output4 ▾	ON ▾
	3	UndefinedIO 3	OK	500	Open ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relay2 ▾	ON ▾
	4	UndefinedIO 4	OK	500	Open ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relay1 ▾	CYCLE ▾
					Update	Reset					

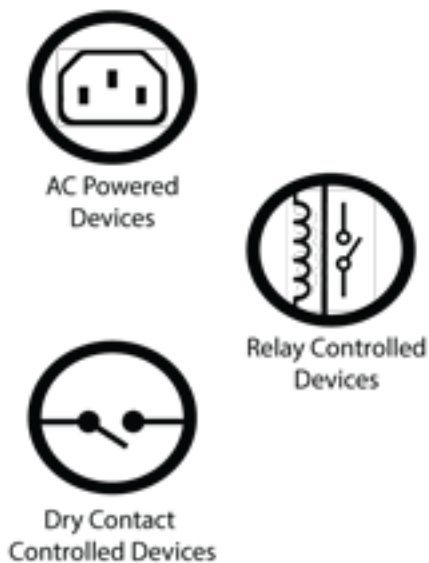
17. Automatic & Remote Control of Equipment

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 ServersCheck's infrastructure monitoring solution you can now also control devices: AC, relay or Dry Contact based. Devices can be controlled either by the Sensorgateway in an automatic way (condition based) or remotely through the ServersCheck cloud. In this section we will cover the automatic (condition based) control. For the cloud-based control we refer to section 28.4.

Requirement:

To use the control features you need a Sensorgateway 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.

17.1. 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.

Output Control

State	Id	Type	Name	Current Value	Default State	Control Output
✓	IO Sensor	Output	Output1	OFF	OFF ▼	CYCLE
✓	IO Sensor	Output	Output2	OFF	OFF ▼	CYCLE
✓	IO Sensor	Output	Output3	ON	OFF ▼	CYCLE
✓	IO Sensor	Output	Output4	ON	OFF ▼	CYCLE

Update | Reset

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.

Sensor Status

State	Id	Type	Name	Current Value	Warning Range	Down Range	Repeat Alarm	Email	SMS/Voice	SNMP Trap	Trigger Output	Set Output State To
✓	Internal Temp	Temp	internal temp	30.17 °C	< 15 or > 35	< 10 or > 40	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Output4 ▼ DISABLE Output1 Output2 Output3 Output4	ON ▼
✓	Water Detect	Water Detect	Water Detect	DRY	-	SET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Output4 ▼ DISABLE Output1 Output2 Output3 Output4	- ▼
✓	Power fail meter	Power fail meter	PowerFail 2	OK	-	SET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Output4 ▼ DISABLE Output1 Output2 Output3 Output4	- ▼
✓	Security Probe	Security	Security 3	OK	-	CLOSE ▼	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Relay1 Relay2	ON ▼
✓	Sound Pressure	Sound	Sound Meter	53.15 dB	< 30 or > 80	< 20 or > 85	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	Shock Sensor	Shock Sensor	Shock5	0.89 G	< 0.7 or > 2	< 0.6 or > 2.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼
✓	Dust Sensor	Dust	Dust Sensor	0 mg/M ³	> 0.2	> 0.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DISABLE ▼	- ▼

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.

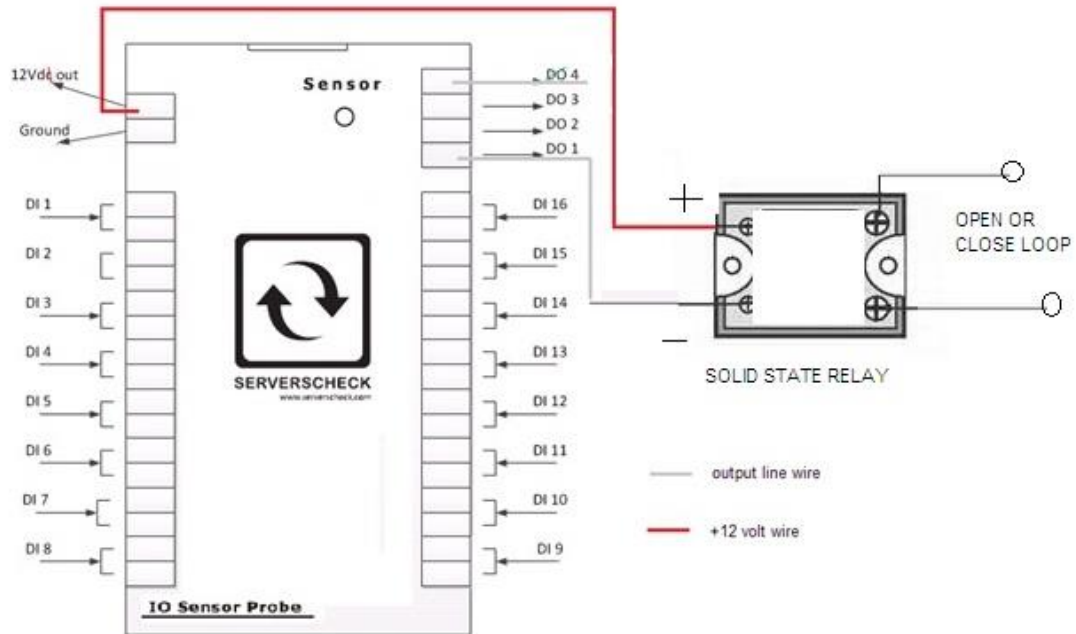
Go to your temperature sensor and select the correct output and the state it should be in, as shown below

State	Id	Type	Name	Current Value	Warning Range	Down Range	Alarm	Voice	Trap	Trigger Output	State To	
✓	Internal Temp	Temp	internal temp	30.29 °C	< 15 or > 35	< 10 or > 40	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Output4 ▼	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 "Output4" to turn ON
- Thus if an Air-condition unit is connected to "Output4" if the temperature rises above 40 it will turn ON automatically

17.2. Wiring for a control output

Now that we have those configured, for the output wiring, kindly refer to 21.6. If an external relay will be used, refer to the following diagram:



18. Mobile SensorGateway

The Mobile SensorGateway is basically the base unit, SensorGateway, with a lot of additional features that's shaped to serve remote sites where, for example, a wired IP connectivity would not be available. And that is solved with the addition of 2G/3G and 4G connectivity.



18.1. Requirements and Specification

Regular sized SIM card, which supports SMS and Data Usage with its Pin Code Deactivated

Supported GSM Mobile frequencies:

GSM | GPRS | EDGE : 850 , 900 , 1800 , 1900 MHz

UMTS|HSPA+ : 900, 1800, 2100 MHz

LTE : 800, 900, 1800, 2100, 2600 MHz

Mobile Certification: CE, GCF

Market: Europe, Middle-East, Africa, Asia, Pacific (for EU frequencies only)

CDMA is not supported.

Operating temperature range: 0°C to +75°C (+167°F)

Operating humidity range: < 90% rH (non-condensating)

Dimensions: 70 mm (2.7") x 88 mm (3.4") x 33 mm (1.4")

TCP/IP: IPv4 at 10/100 Mbps

Power Source: PoE: IEEE 802.3af or optional power adapter

Power Usage: 1500mW (without sensors attached)

Built-in: web server, SNMP v1, v2 & v3 (MD5/AES)

Max distance to switch: depending on cable quality up to 100m / 300ft

18.2. SIM Card

You need a regular sized SIM card with an inactive PIN code. If you have a PIN code activated then ask your mobile operator to deactivate or use any phone to remove it.

The SIM card needs to have a SMS and data plan. Especially when running in “Always Mobile” mode; then we recommend using a postpaid plan and not a prepaid plan. With Prepaid you risk running out of credits resulting in alerts not being sent.

The SIM card is inserted in the slot located on the left side of the device, right under the external temperature probe. The SIM card slot is protected with a metal plate that can be removed with a phillips (cross-head) screwdriver.

We have created a video that details how the mobile sensorgateway should be configured and set up. You can view it on following url:
<https://www.youtube.com/watch?v=ksJw0CpZLb0>



Note: If the PIN code is already deactivated and the device is not registering on a mobile network, Plug the SIM in, let it try to connect on the carrier network for 15 minutes then call the carrier, give them the SIM card number and ask them to allow the device the SIM is on to be registered to the network. They will then allow it to connect, send and receive data. It takes approximately 45 minutes for the device to fully register.

18.3. Internet Connectivity Options

Upon navigating to the “Network Settings” page, you’ll immediately be faced with the added menu namely the “Preferred Connection” and “Connection Check IP” on the top, and the new “Mobile Setting” section at the bottom as shown on the screenshot.

the infrastructure monitoring company
SERVERSCHECK

Preferred Connection: Always Mobile
Connection Check IP: www.google.com

Wired Network Setting

Setting: DHCP Fixed

IP Address: 192.168.11.22
Subnet Mask : 255.255.255.0
Gateway : 192.168.11.2

Primary DNS : 8.8.8.8
Secondary DNS : 4.2.2.2

Net BIOS Name : MOBILE_111
Mac Address (HEX) : 00:03:64:03:31:0E

Mobile Setting

GSM Status : Ready: PH Sun Cellular:2G Signal -71 dBm
IMEI : 354311050034258
APN Name : minternet

Submit Reset

Sensor Menu

- Device Info
- Sensor Status
- Alert History
- Cloud
- User Security Settings
- Network Settings
- Email Alert
- SMS Alert
- SNTP
- SNMP
- Support
- Sensor Calibration
- Firmware Update
- Reboot

Mobile Setting

GSM Status : Ready: PH Sun Cellular:2G Signal -71 dBm
IMEI : 354311050034258
APN Name : minternet

Submit Reset

For the connectivity options, we’ll have 3 as shown on the following screenshot:

the infrastructure monitoring company
SERVERSCHECK

Preferred Connection: LAN/Ethernet
Connection Check IP: Always Mobile
Mobile as Backup

Wired Network Setting

Setting: DHCP Fixed

IP Address: 192.168.11.22
Subnet Mask : 255.255.255.0
Gateway : 192.168.11.2

Primary DNS : 8.8.8.8
Secondary DNS : 4.2.2.2

Net BIOS Name : MOBILE_111
Mac Address (HEX) : 00:03:64:03:31:0E

Sensor Menu

- Device Info
- Sensor Status
- Alert History
- Cloud
- User Security Settings
- Network Settings
- Email Alert
- SMS Alert
- SNTP
- SNMP
- Support
- Sensor Calibration
- Firmware Update
- Reboot

Choosing either “LAN/Ethernet” or “Always Mobile” will make the unit only use that kind of connection. In order to use your mobile connection as a backup Internet connection, choose the option “Mobile as Backup”.

In order to get your mobile Internet connection working, make sure to fill out the “APN Name” field at the “Mobile Setting” correctly according to your ISP.

18.4. Cloud Platform

With ServersCheck's cloud platform, your SensorGateways will now be more manageable even without the use of other integration software. This feature will only be applicable to SensorGateways running at least on firmware Release 4.0. and with its control feature only available to firmware Release 6.0. and above.

18.5. Registration

On the cloud tab, click the highlighted button below to go to ServersCheck's cloud platform website.

Cloud Settings

Enable Cloud Data Upload :

Device ID :

PIN :

You can find your Device ID and PIN code in the Cloud portal.
Click [here](#) to access / create your account.

Wireless Information
Alert Log
Cloud
User Security Settings
Network
Email Alert
SMS Alert
SNTP
SNMP

You will be taken to the web page: <https://my.infrastructuremonitoring.com/>

Create a new account and make sure to verify your account by responding to the confirmation email message.

LOGIN

Email:

Password:

Remember me

[Forgot password?](#)
[Create new account](#)

GO

Upon doing so, you can now proceed to register your SensorGateway to your cloud account.

18.6. SensorGateway Identification

From your cloud dashboard, click "Add New Device" to name your SensorGateway and save it. After that, you will see the credentials associated with that as seen on the screenshot.

SGW 12 - Wireless

Status: **ok**

Device ID:

Device PIN:

On the SensorGateway that you want to associate with the newly added device, go to the Cloud section and enter the generated credentials. These will of course be unique on each of your SensorGateways.

18.7. Sensor Dashboard

Now that that's done, after 1-2 minutes maximum, you should now see your sensors by clicking "Data" on the newly added device.

SGW 12 - Wireless
Device ID: XXXXXXXXXX
Device Created - 19/12/2013 09:22:47
Last Update - 23/12/2013 08:37:29
Share sensor data: [get link](#)

24.37	24.75	23.81	24.09	56.95	26.51
EXT TEMP WT-0013	EXT TEMP EXT. TEMP	EXT TEMP WTEMP3	EXT TEMP WTEMP1	HUMIDITY WTH-0005	INT TEMP INT. TEMP

In this section, you can optionally hand out read-only access to this specific SensorGateway by clicking "get link" on "Share sensor data."

Read Only Access to Sensor Data ×

This feature allows you to share sensor data with other users without giving them the access to edit or modify your data.

Access is granted on a per device basis.


 Generate read only link

After clicking the generate button, you'll be seeing the following:

Read Only Access to Sensor Data ×

By sharing following link you can give other users access to the values of the device.

`https://my.infrastructuremonitoring.com/sensordata_readonly.php?ID=GeKjXm`

 Deactivate read only link

Additionally, after handing them out, you have the option to deactivate the link by simply clicking the associated button.

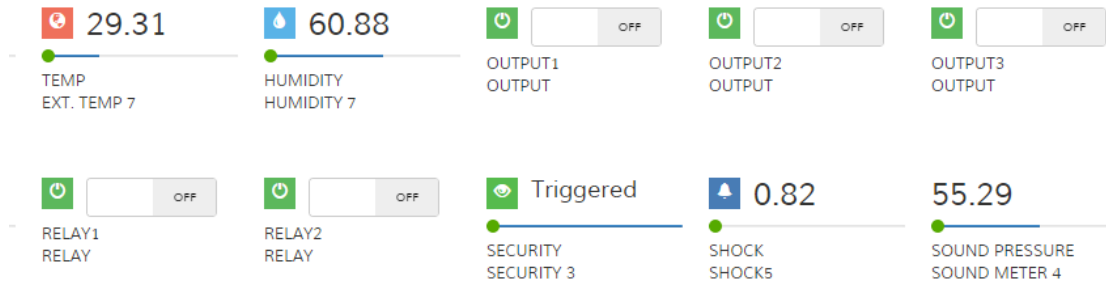
18.8. Trigger control outputs via the Cloud

Disclaimer

Only works with firmware version 6, which is available as an update to sensor gateways purchased from 2014 and onwards. And would only work with ServersCheck I/O Probe and Sensor Hub.

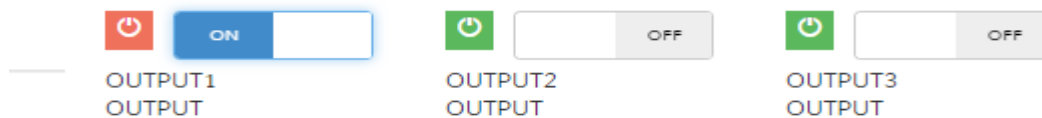
How it works

The Control feature of the Cloud platform is with the I/O devices or commonly called the Dry contact solution. This enables you to have the option to turn an Output or a Relay ON or OFF remotely.

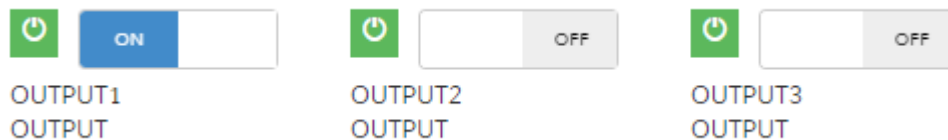


Once the cloud is in sync with the gateway it will show the status of the triggers for the outputs and relays. Upon changing the status to either ON or OFF, the icon will change from green to red which means our cloud is trying to communicate with our gateway.

****from OFF to ON****



In 1-2 minutes the status icon should revert back to green and switch to ON



**** you can then remotely turn an air conditioning ON or lock an electronic door remotely examples on what you can do with this cloud control****

Note:

Do not use Special characters under the Name Tab and preferably only letters and numbers, refer to the image.

Output Control

State	Id	Type	Name	Current Value	Default State	Control Output
<input checked="" type="checkbox"/>	IO Sensor	Output	Output1	OFF	OFF ▼	CYCLE
<input checked="" type="checkbox"/>	IO Sensor	Output	Output2	OFF	OFF ▼	CYCLE
<input checked="" type="checkbox"/>	IO Sensor	Output	Output3	ON	OFF ▼	CYCLE
<input checked="" type="checkbox"/>	IO Sensor	Output	Output4	ON	OFF ▼	CYCLE
<input checked="" type="checkbox"/>	IO Sensor	Relay	Relay1	ON	OFF ▼	CYCLE
<input checked="" type="checkbox"/>	IO Sensor	Relay	Relay2	OFF	OFF ▼	CYCLE

Update | Reset

Input Status

Status	DI	Name	Value	Time(ms)	Normal State	Repeat Alarm	Email	SMS	SNMP Trap	Trigger Output	Set Output State To
<input checked="" type="checkbox"/>	1	UndefinedO test1	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Output1 ▼	ON ▼
<input checked="" type="checkbox"/>	2	UndefinedO test2	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Output2 ▼	ON ▼
<input checked="" type="checkbox"/>	3	UndefinedO test3	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relay1 ▼	ON ▼
<input checked="" type="checkbox"/>	4	UndefinedO test4	OK	500	Open ▼	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relay2 ▼	ON ▼

Update | Reset

* Do not use special characters as an input within the red circle preferably only letters and numbers*

18.9. Alerts

The ServersCheck Cloud Platform provides 2 kinds of alerts: threshold and if-then (IFT) alerts. While the 2 methods will be discussed in greater detail on the following sub-sections, the main difference between the two would be their respective scopes.

For the threshold alerts, configuring an alert would be automatically applied to all devices registered on the Cloud Platform. For IFT alerts, one could filter the alerts so as to apply it only on the desired conditional scenario(s). Despite their difference, both functionalities remain to be interoperable with each other.

18.10. Threshold Alerts

Alerts defined here will be completely independent from what was configured on the associated SensorGateway since you'll be defining new thresholds and email address for the alert to be sent.

On the "Alerts" tab, click "Add New Alert" to get started.

Add new alert ×

Sensor Type


Temp ▾

CriticalLow **WarningLow** **WarningHigh** **CriticalHigh**


10 15 28 30

Email

myemail@address.com

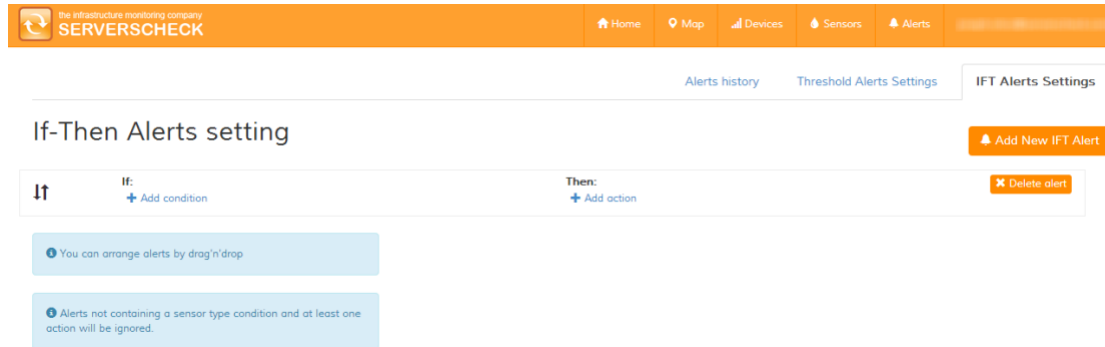
 Save

After which, you should now see it listed on the present tab. And as listed, you can easily edit your alert's settings by clicking "Edit."

dew point	8	10	17	18		 Edit	 Delete
dry contact	1	15	1	1		 Edit	 Delete
flooding	1	0	2	3		 Edit	 Delete
flow rate	0	1	20	30		 Edit	 Delete
fuel level	10	20	70	80		 Edit	 Delete
humidity	40	45	60	62		 Edit	 Delete
lost						 Edit	 Delete
power fail	1	1	1	1		 Edit	 Delete
security	1	2	3	4		 Edit	 Delete
shock	0	0	0	1		 Edit	 Delete
sound pressure	10	20	40	50		 Edit	 Delete
temp	10	15	28	30		 Edit	 Delete
volt meter	0	5	40	50		 Edit	 Delete
watt meter	0	5	40	50		 Edit	 Delete

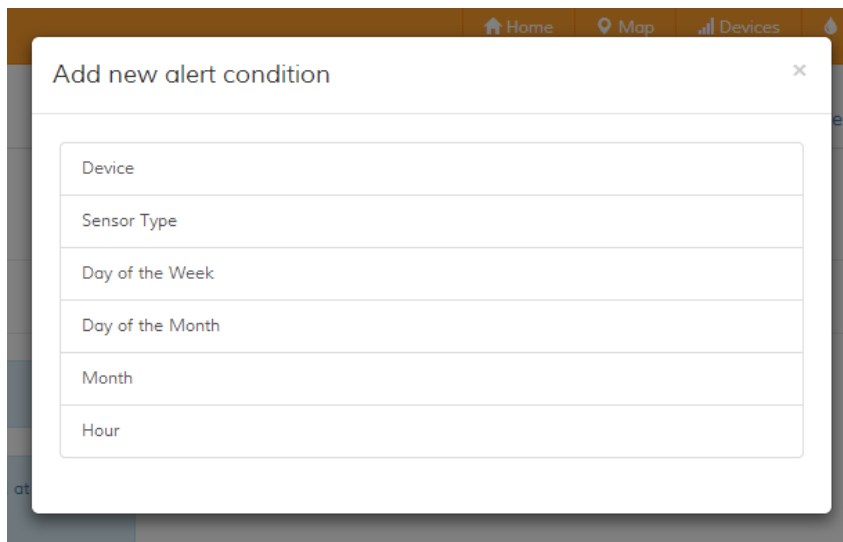
18.11. If-Then (IFT) Alerts

To begin with, simply proceed to “IFT Alerts Settings” then click “Add New IFT Alert.” Upon doing so, you should see the first section for your IFT alerts appearing.



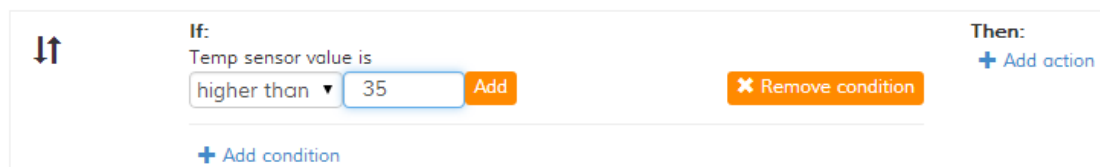
The screenshot shows the SERVERSCHECK interface with the 'IFT Alerts Settings' tab selected. The page title is 'If-Then Alerts setting'. There are navigation links for 'Alerts history', 'Threshold Alerts Settings', and 'IFT Alerts Settings'. A '+ Add New IFT Alert' button is visible. Below the title, there are sections for 'If:' and 'Then:' with '+ Add condition' and '+ Add action' buttons respectively. A 'Delete alert' button is also present. Two informational notes are displayed: 'You can arrange alerts by drag'n'drop' and 'Alerts not containing a sensor type condition and at least one action will be ignored.'

For your conditions, hit “Add condition” and choose whichever parameters you desire. For this demo, we’ll simply select a temperature threshold of 35 degrees for our condition.



The screenshot shows a modal dialog box titled 'Add new alert condition'. It contains a list of parameters to choose from: Device, Sensor Type, Day of the Week, Day of the Month, Month, and Hour. The dialog is overlaid on the main interface, which shows navigation links for Home, Map, Devices, and Sensors.

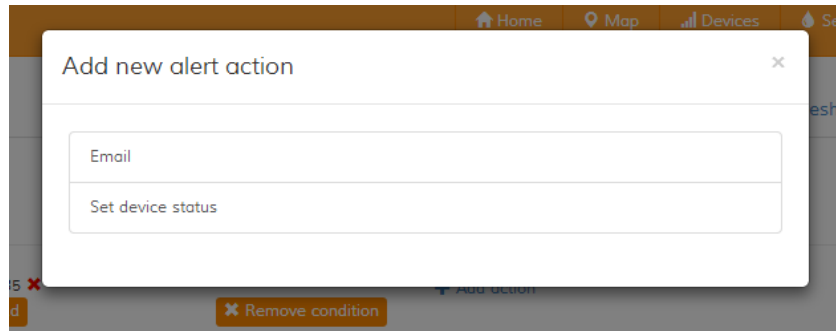
If-Then Alerts setting



The screenshot shows the 'If-Then Alerts setting' interface. The 'If:' section now contains a condition: 'Temp sensor value is higher than 35'. There are 'Add' and 'Remove condition' buttons next to the condition. The 'Then:' section has a '+ Add action' button. A '+ Add condition' button is also visible below the condition.

NOTE: As indicated on the blue note on the lower left page, your conditions should at least contain a sensor type.

For our action, by hitting “Add action,” you can choose to send an email alert, set the device status, or both.



Now after the configured demo, if any of the configured SensorGateway’s temperature sensor goes above 35 degrees, an alert will be sent via email and that device’s status will be set to a “warning” state.

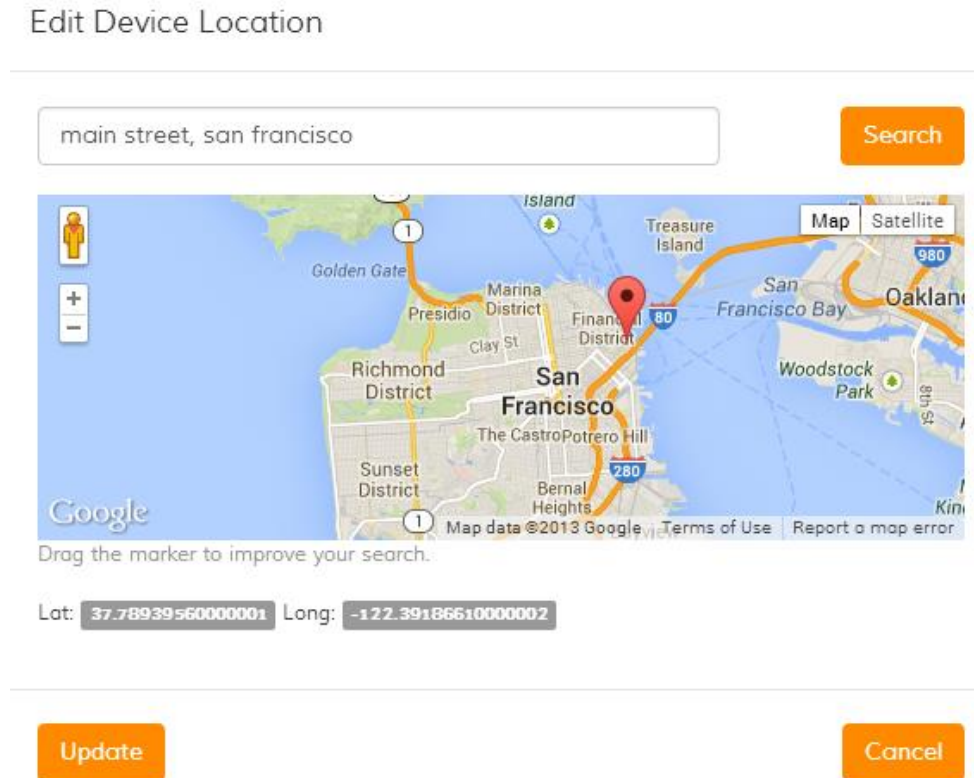
If-Then Alerts setting

If:	Then:
Temp sensor value is higher than 35 ✖	Send email to my.email@address.com ✖
lower than ▼ Add ✖ Remove condition	Add ✖ Remove action
+ Add condition	Set device status to warning ✖ Remove action
	+ Add action

18.12. Geomapping sensors

For a more organized view of your over-all monitoring infrastructure, you could setup the location of each of your SensorGateways.

From the “Devices” tab, click “Location” to set it up.



After updating it, you could now navigate to the “Map” tab and view the configured devices.



19. Power Rating

A SensorGateway 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 ServersCheck sensor modules:

MODULE	POWER RATING
BASE-WIRED SensorGateway	564 mW
EXP-8HUB SensorHub	564 mW
EXP-WHUB Wireless Hub	192 mW
EXP-5HUB MultiSensor & Hub	1824 mW
ENV-TEMP Temperature Sensor Probe	60 mW
ENV-THUM Temperature/Humidity Sensor Probe	60 mW
ENV-TSTAIN Stainless Steel Temperature Sensor Probe	60 mW
ENV-DUST Dust Sensor Probe	156 mW
ENV-AIRFLW Airflow Sensor Probe	72 mW
ENV-WLEAK-COMBO Water Leak Sensor Probe	180 mW
ENV-WSPOT Water Spot Sensor Probe	180 mW
ENV-FLEAK-COMBO Fuel Leak Sensor Probe	180 mW
PWR-FAIL Power Failure Sensor Probe	204 mW
PWR-CUR Power Current Sensor Probe	276 mW
SEC-SOUND Sound Pressure Sensor Probe	312 mW
SEC-SMOKE Smoke Sensor Probe	204 mW
SEC-DOOR Door Security Probe	204 mW
SEC-SHOCK Shock Sensor Probe	72 mW
PWR-FUEL Fuel Sensor Probe	1079 mW
PWR-DC-METER DC Meter Probe	323 mW
DC Probe with Current Transducer	719 mW
IND-IO IO Probe	371 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 SensorGateway 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 SensorGateway (i.e. SensorGateway with IO and QoS probes).

20. RMA / Repair

Defective ServersCheck 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.serverscheck.com account.

If purchased from a reseller, add your products to your my.serverscheck.com account.

Customers with an ServersCheck+ agreement enjoy express warranty service for their warranty covered defects.

Warranty covered repairs:

All ServersCheck 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.