



Software User Manual

A. Login Procedure

B. Sensor Dashboard (software version 1.2.x)

USER MANUAL

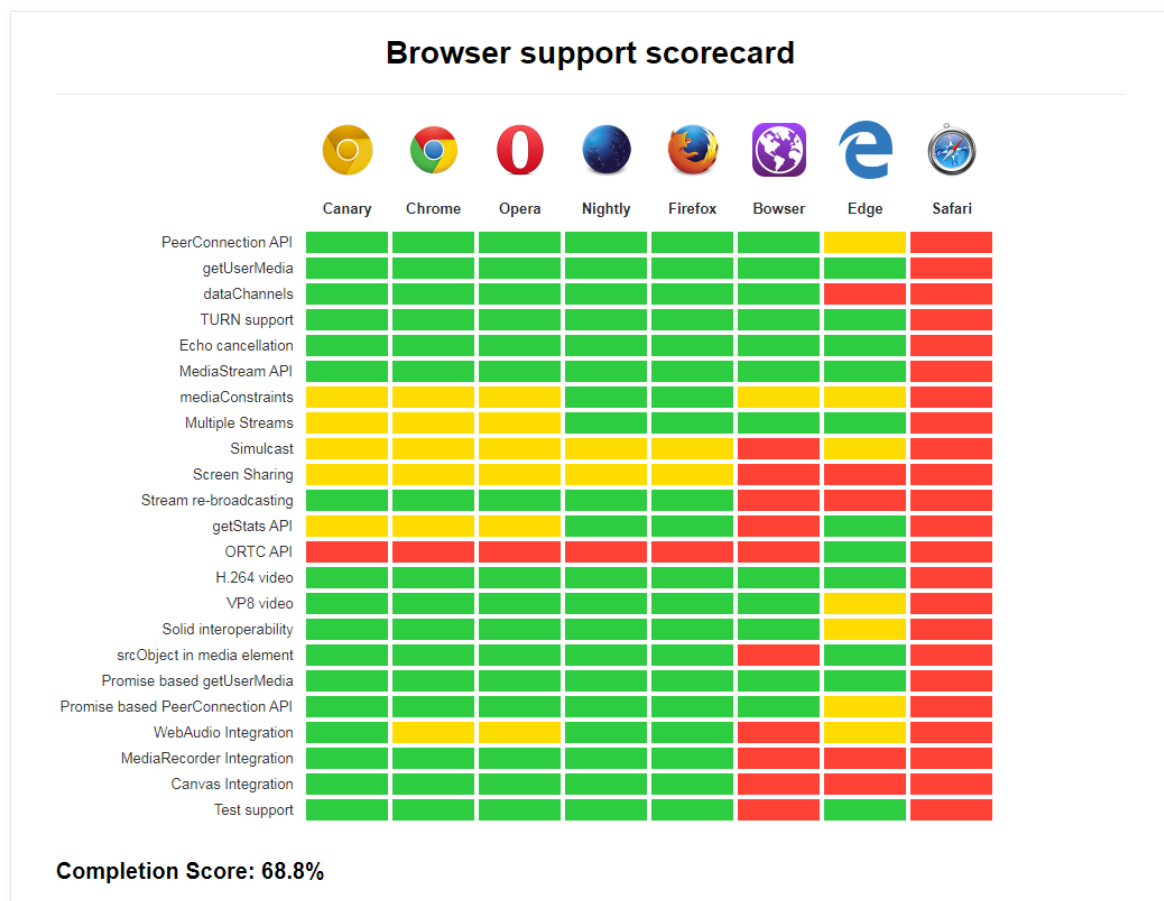
A. Login procedure iQunet sensor network

1. Install a browser which is supporting WebRTC

iQunet strongly advises to use the Google Chrome browser.

Note: Microsoft will not develop WebRTC for Internet Explorer. Microsoft Edge and Apple Safari are under development and not yet WebRTC ready. Please check <http://iswebrtcreadyyet.com/> for the latest updates.

Is WebRTC ready yet?



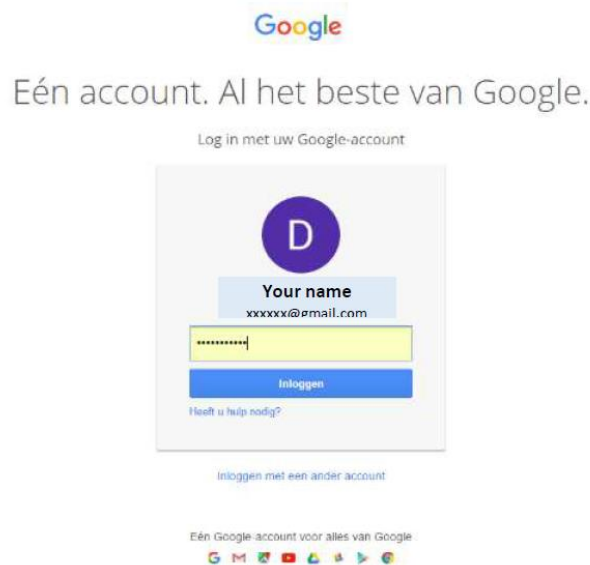
WebRTC is an open framework for the web that enables Real Time Communication in the browser. It includes the fundamental building blocks for high quality communications on the web, such as network, audio and video components used in voice and video chat applications. The WebRTC effort is being standardized on an API level at the W3C and at the protocol level at the IETF.

2. Surf to: rtc.iqunet.be

3. Identify yourself with your Google account

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This identification is to verify you are not a web robot. Once logged in via a Google account, you will not be prompted anymore.



4. Logon to the iQunet Sensor Dashboard

You will be prompted for Key and ID as shown below (API Key and Sensor Proxy ID are provided by iQunet).

A screenshot of a "WebRTC Server Login" form. The form has a blue header with a padlock icon and the text "WebRTC Server Login". Below the header are two text input fields: "Cloud API Key:" and "Sensor Proxy ID:". Each field contains a placeholder text "xxxxxxxxxxxxxxxxxxxx". At the bottom of the form are two buttons: "Login" and "Direct".

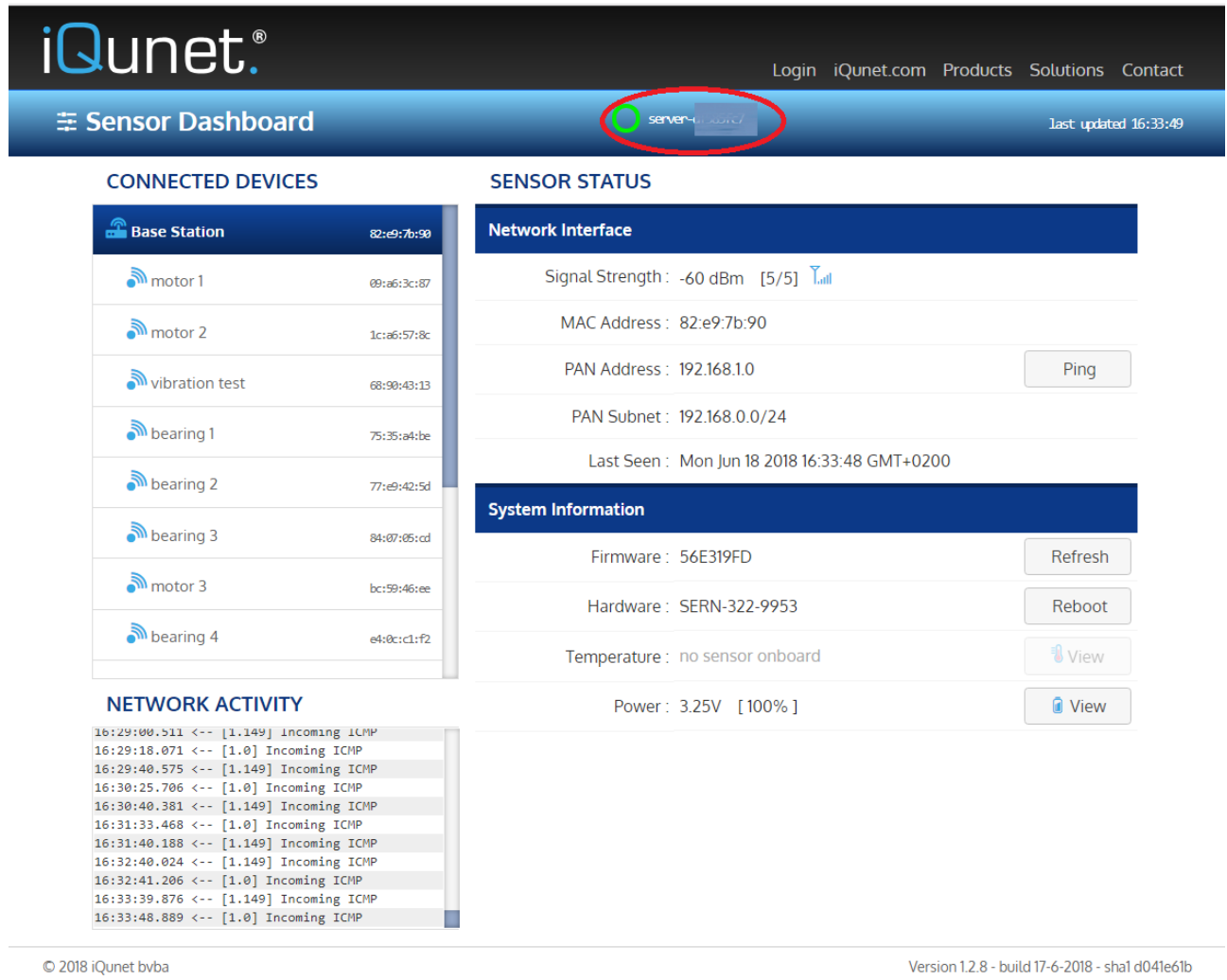
4.1. WebRTC Server Login

Cloud API Key: see distributed key (e.g. xxxxxxxxxxxxxxxxxxxx)

Sensor Proxy ID: see the ID on your UNIX server (e.g. server-xxxxxxx)

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5. You are connected to the iQunet Unix Server



iQunet.® Login iQunet.com Products Solutions Contact

Sensor Dashboard Last updated 16:33:49

CONNECTED DEVICES

Base Station	82:e9:7b:90
motor 1	09:a6:3c:87
motor 2	1c:a6:57:8c
vibration test	68:90:43:13
bearing 1	75:35:a4:be
bearing 2	77:e9:42:5d
bearing 3	84:07:05:cd
motor 3	bc:59:46:ee
bearing 4	e4:0c:c1:f2

SENSOR STATUS

Network Interface

Signal Strength : -60 dBm [5/5]

MAC Address : 82:e9:7b:90

PAN Address : 192.168.1.0 [Ping](#)

PAN Subnet : 192.168.0.0/24

Last Seen : Mon Jun 18 2018 16:33:48 GMT+0200

System Information

Firmware : 56E319FD [Refresh](#)

Hardware : SERN-322-9953 [Reboot](#)

Temperature : no sensor onboard [View](#)

Power : 3.25V [100%] [View](#)

NETWORK ACTIVITY

```

16:29:00.511 <-- [1.149] Incoming ICMP
16:29:18.071 <-- [1.0] Incoming ICMP
16:29:40.575 <-- [1.149] Incoming ICMP
16:30:25.706 <-- [1.0] Incoming ICMP
16:30:40.381 <-- [1.149] Incoming ICMP
16:31:33.468 <-- [1.0] Incoming ICMP
16:31:40.188 <-- [1.149] Incoming ICMP
16:32:40.024 <-- [1.149] Incoming ICMP
16:32:41.206 <-- [1.0] Incoming ICMP
16:33:39.876 <-- [1.149] Incoming ICMP
16:33:48.889 <-- [1.0] Incoming ICMP

```

© 2018 iQunet bvba Version 1.2.8 - build 17-6-2018 - sha1 d041e61b

USER MANUAL

B. iQunet Web GUI: Quick Start Guide

1. General

The screenshot shows the iQunet Sensor Dashboard web interface. The top navigation bar includes the iQunet logo, a 'Sensor Dashboard' menu, and links for 'Login', 'iQunet.com', 'Products', 'Solutions', and 'Contact'. A status bar at the top right shows 'Last updated 16:33:49'.

The main content area is divided into three primary sections:

- CONNECTED DEVICES:** A table listing devices connected to the base station. The table has columns for device name and MAC address.

Base Station	82:e9:7b:90
motor 1	08:a6:3c:87
motor 2	1c:a6:57:8c
vibration test	68:90:43:13
bearing 1	75:35:a4:be
bearing 2	77:e9:42:5d
bearing 3	84:07:65:cd
motor 3	bc:59:46:ee
bearing 4	e4:0c:c1:f2
- SENSOR STATUS:** A dynamic pane showing sensor status and device settings. It includes:
 - Network Interface:** Signal Strength: -60 dBm [5/5], MAC Address: 82:e9:7b:90, PAN Address: 192.168.1.0, PAN Subnet: 192.168.0.0/24, Last Seen: Mon Jun 18 2018 16:33:48 GMT+0200. A 'Ping' button is present.
 - System Information:** Firmware: 56E319FD (Refresh), Hardware: SERN-322-9953 (Reboot), Temperature: no sensor onboard (View), Power: 3.25V [100%] (View).
- NETWORK ACTIVITY:** A scrolling log of sensor activity messages (sent and received messages per sensor).


```

16:29:00.511 <- [1.149] Incoming ICMP
16:29:18.071 <- [1.0] Incoming ICMP
16:29:40.575 <- [1.149] Incoming ICMP
16:30:25.706 <- [1.0] Incoming ICMP
16:30:40.381 <- [1.149] Incoming ICMP
16:31:33.468 <- [1.0] Incoming ICMP
16:31:40.188 <- [1.149] Incoming ICMP
16:32:40.024 <- [1.149] Incoming ICMP
16:32:41.206 <- [1.0] Incoming ICMP
16:33:39.876 <- [1.149] Incoming ICMP
16:33:48.889 <- [1.0] Incoming ICMP
      
```

Callouts provide additional context:

- General information pane:** Points to the top navigation bar.
- Device pane:** list of devices connected to the base station. Connected devices can become active or queued.
- Network activity pane:** this pane shows scrolling logs of sensor activity messages (sent and received messages per sensor).
- Sensor status pane:** this dynamic pane shows sensor status and device depending information and settings.

Footer information: © 2018 iQunet bvba, Version 1.2.8 - build 17-6-2018 - sha1 d041e61b

1.1. General information pane

This section provides a detailed view of the top header of the iQunet Sensor Dashboard. The header includes the iQunet logo, a 'Sensor Dashboard' menu, and links for 'Login', 'iQunet.com', 'Products', 'Solutions', and 'Contact'. A status bar at the top right shows 'Last updated 16:33:49'.

Callouts explain the components of the header:

- Connection status to the iQunet UNIX server from sensor network:** A green circle icon indicates a connected status. A legend explains the status colors:
 - Green: connected
 - Red: connection lost
 - Grey: connecting
- Connected server:** Points to the 'server-...' label next to the connection status icon.
- Time stamp of last screen refresh:** Points to the 'Last updated 16:33:49' text in the top right corner.

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1.2. Device pane

Devices connected to the base station. Once seen by the base station, the list remains intact until the device is deleted. Devices losing contact with the base station will show no updated network status (see Sensor Status pane) but remain linked with the base station (and remain in the list).

Active Devices list: this list is showing the devices currently measuring and sending data to the OPC.

Queued Devices list: this list is showing the devices from the connected devices list currently selected for measuring and sending data on preset time intervals.

CONNECTED DEVICES

Base Station	e6:6c:6d:b0
Device	2f:d7:25:8d
Device	4e:10:1c:90
Device	72:f0:7d:90
Device	a0:8d:5c:53
ACTIVE DEVICES	
SCHEDULE	
Device	ETA 15:03:53

Toggle for pausing or activating the complete queued devices list.

Paused: click to activate the complete queued list

Activated: click to pause the complete queued list

1.3. Network activity pane

This pane shows scrolling logs of sensor network messages.

"<- -": incoming messages from connected sensor devices (seen sensors)

"- ->": outgoing messages to the sensor devices (will be received as soon as sensor is awake)

NETWORK ACTIVITY

```

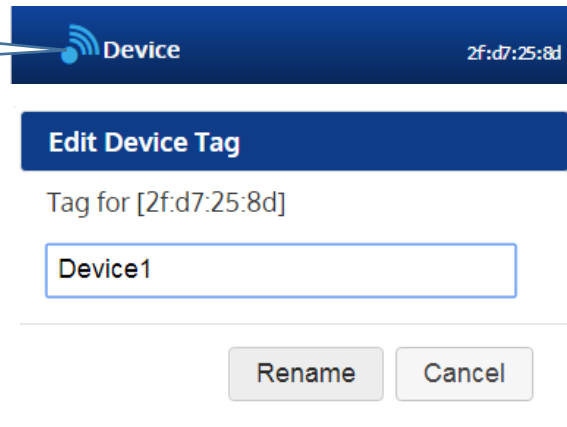
15:00:51.554 <- [1.143] Incoming ICMP
15:00:58.287 <- [1.140] Incoming ICMP
15:01:11.241 <- [1.142] Incoming ICMP
15:01:19.419 <- [1.143] Incoming ICMP
15:02:00.357 <- [1.140] Incoming ICMP
15:02:01.960 <- [1.143] Incoming ICMP
15:02:14.889 <- [1.142] Incoming ICMP
15:03:02.447 <- [1.140] Incoming ICMP
15:03:05.532 <- [1.143] Incoming ICMP
15:03:18.497 <- [1.142] Incoming ICMP
15:03:49.741 - -s [1.140] Scheduled core status request.
15:03:53.536 - -s [1.140] Scheduled vibration request.
    
```

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2. General functionality

2.1. Renaming a device

By pressing the icon, a popup appears. The device can be renamed.



Edit Device Tag

Tag for [2f:d7:25:8d]

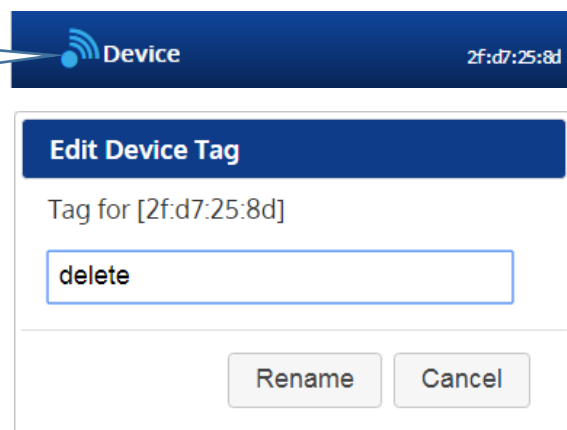
Device1

Rename Cancel

The devices MAC address cannot be altered and remains unique.

2.2. Deleting a device

By pressing the icon, a popup appears. The device can be deleted by renaming it to "delete".



Edit Device Tag

Tag for [2f:d7:25:8d]

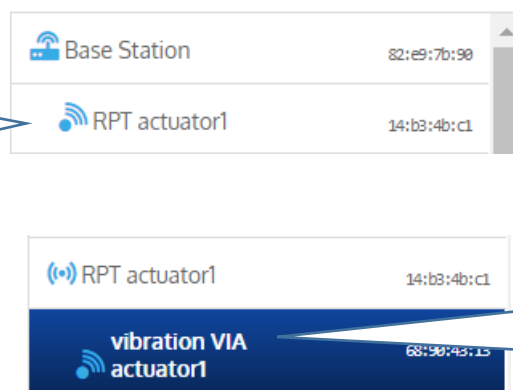
delete

Rename Cancel

When deleted, the device will be removed from the sensor list. As soon as the battery is activated in the device, the device pops up again in the list and is automatically connected to the closest base station in the field when in reach.

2.3. Relaying a device via a repeater or an actuator

To relay sensors via a repeater or actuator, simply rename the repeater or actuator and start the name with "RPT". The name of the repeater or actuator may NOT contain spaces.



Base Station 82:e9:7b:90

RPT actuator1 14:b3:4b:c1

vibration VIA actuator1 68:90:43:13

To force the relay of a sensor device via a repeater or actuator, type "VIA" after the device name followed by the repeater or actuator name.

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System Information

Firmware : F9D87165


Refresh

Hardware : SERN-322-9643

Reboot

In the device pane select each device involved in the relaying (repeater, actuator and sensors), and press "Reboot" for each of them.

Network Interface

Signal Strength : -54 dBm [5/5] 

MAC Address : 68:90:43:13

PAN Address : 192.168.2.140

Ping

WakeUp Interval : 60 sec ▼

Last Seen : Mon Mar 04 2019 12:19:50 GMT+0100

By clicking on each device, check if each repeater or actuator has received a new subnet like "192.168.2.xxx", "192.168.3.xxx", etc. In this example, sensor 68:90:43:13 is fixed relayed via actuator "RPT actuator1" under the subnet "192.168.2".

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3. Sensor status pane

3.1. Network interface pane sensors

SENSOR STATUS

Network Interface

Signal Strength : -93 dBm [2/5] 

MAC Address : 2f:d7:25:8d

PAN Address : 192.168.1.140

Ping

WakeUp Interval : 60 sec 

Last Seen : Fri Feb 02 2018 18:42:37 GMT+0100

System Information

Firmware : 0407830E

Refresh

Hardware : SERN-322-9943

Reboot

Temperature : 5.7 °C

 View

Power : 2.74V [83%]

 View

Network Interface pane is showing current interface settings from selected device.

Signal strength: current wireless signal strength between device and base station.

When connected, the device receives a unique PAN address. This address is used in the network activity log. Ping to check network activity.

Sensors last network contact

MAC address: the devices unique number. This number is printed on the device itself.

Device wakeup interval: the device will be in iQunet sleep mode for the set time. It will become active at the end of the set time interval. Change interval by changing the number.

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3.2. Network interface pane base station

SENSOR STATUS

Network Interface

Signal Strength : -114 dBm [0/5] 

MAC Address : 82:e9:7b:90

PAN Address : 192.168.1.0

Ping

PAN Subnet : 192.168.0.0/24

Setup...

Last Seen : Mon Mar 04 2019 11:10:22 GMT+0100

System Information

Firmware : B36B79C1

Refresh

Hardware : SERN-322-9953

Reboot

Temperature : no sensor onboard

 View

Power : 3.25V [100%]

 View

Network Interface pane is showing current interface settings from selected device.

MAC address: the device's unique number. This number is printed on the device itself.

When 2 servers are using the same PAN subnet, you can change the subnet of the base station.

When connected, the device receives a unique PAN address. This address is used in the network activity log. Ping to check network activity.

Base station's last network contact

Edit PAN Subnet

Enter class C network:

192 . 168 . 0 . 0

The subnet mask has the following form:
e.g. 192.168.0.0

Please note: The base station will restart and registered devices will be disconnected. You can revert to the original mask at a later time to communicate with those devices.

Change

Cancel

Fill out a different subnet (e.g. 192.169.0.0) and click Change.

Select each device involved in the relaying and press Reboot for each of them. If sensors are connected to the wrong server, you can reboot them from the other server or reinsert the batteries while they are close to the intended server's base station.

System Information

Firmware : B36B79C1

Refresh

Hardware : SERN-322-9943

Reboot

Temperature : 18.5 °C

 View

Power : 2.93V [81%]

 View

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3.3. System information pane

SENSOR STATUS

Network Interface

Signal Strength : -93 dBm [2/5] 

MAC Address : 2f:d7:25:8d

PAN Address : 192.168.1.140

Ping

WakeUp Interval : 60 sec ▼

Last Seen : Fri Feb 02 2018 18:42:37 GMT+0100

System Information

Firmware : 0407830E

Refresh

Hardware : SERN-322-9943

Reboot

Temperature : 5.7 °C

 View

Power : 2.74V [83%]

 View

System Information pane is showing the current connected device information.

Firmware: current firmware version running on selected sensor device.

Board Temperature of the sensor device (when available). Pressing "View" will generate a graph over time. Data points correspond to each System Information inquiry by clicking on the device in the device pane on the left.

Current hardware version of the selected sensor device. Pressing "reboot" resets the hardware. This is equivalent to removing and re-installing batteries.

Status of the batteries, with indication of remaining charge of the batteries. Pressing "View" will generate a graph over time. Data points correspond to each System Information inquiry by clicking on the device in the device pane on the left.

3.4. Auto measurements pane

Auto Measurements

Queue Interval : disabled [hh : mm]



A sensor device which is enabled for Auto Measurement will show this extra pane. To start queuing the sensor measurement, slide the button to blue. The queue interval can now be set.

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MEMS Vibration Setup

Rate : 3200Hz Axis : XYZ

Samples : G

Capture : []

Vibration Download

i Prefetch : Z

Download : ne

Analyse : Stats

Auto Measurements

Queue Interval : 00:05 [hh : mm] ☒

Select the queue interval in the dial pane. First select the hours by dragging the clock pointer over the desired number. Then repeat this action for selecting the minutes.

CONNECTED DEVICES

Base Station	e6:6c:6d:b0
Device	2f:d7:25:8d
Device	4e:10:1c:90
Device	72:f0:7d:90
Device	a0:8d:5c:53
ACTIVE DEVICES	
SCHEDULE	
Device	ETA 16:08:18

Queued devices will now appear in the "Queued devices" list.

IMPORTANT: The total queue list is started by default. To stop the process click the "Active" button with the pause icon. The process queue will become paused.

When scheduled at the same time, devices will remain queued in the list until the active device list is free to host another device. This way avoiding interference in the radio channels of the wireless network.

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CONNECTED DEVICES

Base Station	e6:6c:6d:b0
Device	2f:d7:25:8d
Device	4e:10:1c:90
Device	72:f0:7d:90
Device	a0:8d:5c:53
ACTIVE DEVICES	
SCHEDULE	
Device	ETA 16:08:18

The queue process is paused. To reactivate the process, click the "Paused" button with the play icon.

Within the set interval, the device will become active and appears under the active devices list.

CONNECTED DEVICES

Base Station	e6:6c:6d:b0
Device	2f:d7:25:8d
Device	4e:10:1c:90
Device	72:f0:7d:90
Device	a0:8d:5c:53
ACTIVE DEVICES	
Device	15:51:50
SCHEDULE	
Active	

3.5. Sensor control pane

3.5.1. Hall sensor control (proximity sensor)

Pane appears when selecting a sensor device with a hall sensor on board.

The sensor device can be triggered to start measurements as soon as the device is awake (see wakeup interval). Clicking "Force" starts the burst of measurements. "Stop" will interrupt the measurements triggered earlier.

Hall Sensor Control

Trigger Sensor :

Force

Stop

Hall :

No Data

No Data

View

Field values are combined with the measuring voltage at that time (for calibration purposes). The burst of measurements can be viewed in a graph by pressing "View".

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3.5.2. Tilt sensor control (inclination sensor)

Tilt Sensor Control

Guard Roll : 60 deg

Burst Samples : 32

Activity Level : 0.12G

Position : No Data No Data

Trigger Sensor : Force

View

Pane appears when selecting a sensor device with a tilt sensor on board.

Maximum allowed roll before initiating an alarm. If the set value is surpassed, the connected actuator device will be triggered.

Select the number of samples in a measurement burst.

Required activity level to wake up the sensor.

The sensor device can be triggered to start measurements as soon as the device is awake (see wakeup interval). Clicking "Force" starts the burst of measurements. The measurement will stop after the chosen number of burst samples.

When active, Roll and Pitch values are visualized. The recorded burst of measurements can be viewed in a graph by pressing "View".

3.5.2.1. Activation of the roll guard

The guard of the inclination roll parameter works instantaneously in combination with the actuator. For the actuator to enter the standby position for the roll guard, the inclination sensor needs to make a measurement first (click "Force"). This is the same whether the actuator works as a repeater or not.

To check this functionality, you can perform the following test (if possible, perform the test on a table first).

Remark: make sure to perform this test only when the actuator is connected to the mains otherwise the UPS function will start working and the batteries will drain.

- Connect the actuator to the mains with the USB charger. It is not necessary to insert the batteries.
- Place your multimeter in the outside front contact of the actuator and measure the resistance. You will detect a normal closed contact when the actuator is on.
- Insert the batteries into the inclination sensor. The sensor will wake up (check the messages in the network activity pane). The "device" will appear in the device list. Keep the sensor values as set initially.
- Click "Force". The inclination sensor will start measuring within 60 seconds (the wake-up interval as set in the sensor information pane on the top). You can lower the wake-up interval setting but this is not necessary since it will take some time before the sensor learns to wake up every 3 seconds effectively for example.

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- Make some roll and pitch movements with the inclination sensor. The sensor will show changing values in the two “position” fields in the dashboard. After measuring the set number of samples (e.g. 32), the sensor has proven to be active and is now armed to guard the roll of the sensor.
- Roll the sensor over the set guard roll angle (positive or negative). The message “actuator message 01” will appear in the network activity pane. The actuator is then switching the contact to open (see the readings on your multimeter).
- Return the sensor to a safe position after 10 to 30 seconds. The sensor will send the “actuator message 00” to inform the actuator that everything is safe again. The actuator contact will be closed again.

The guard of the roll angle is always on, even if the inclination sensor looks asleep. There is no need to trigger the sensor again. In this way there will be little use of the batteries.

Note that the inclination sensor is optimized to be mounted on vibration machinery. A minimum vibration level is needed to keep the sensor awake internally. If the sensor doesn't detect any vibration, the machinery is assumed to be not active, and the sensor will go in ultra-deep sleep mode. As soon as there is a minimum activity (see the set activity level), the sensor will switch on. Setting the activity level to none will prevent the sensor from going to deep sleep mode. The sensor will then always be active, even at night or when not in use. This will use unnecessary battery life time. The sensor batteries will drain quick in this case.

3.5.3. Temperature logger

The temperature logger is a sensor that can operate away from the network. Once armed in the network, the sensor can be triggered by vibrations to start the measurement, even when there is no network connection. The measurements are logged on the sensor until the sensor comes back in the sensor network. The measurements are then downloaded to the OPC server database. The measurements can be viewed in the “Templogger Lab”.

The screenshot displays the 'Temp-Logger Setup' and 'Temp-Logger Download' sections of a software interface. The 'Temp-Logger Setup' section includes a 'Samples' dropdown menu set to 32, a 'Status' field showing 0, a 'Capture' button with a red dot and 'REC' text, and a 'WakeUp' dropdown menu set to 'off'. The 'Temp-Logger Download' section includes a 'Download' button with a cloud icon and 'Now' text, an 'Auto' toggle switch that is currently turned on, a 'Progress' bar, and a 'History' button with a circular arrow icon and 'Log' text. Annotations with callout boxes provide additional context: 'Number of samples during one record' points to the 'Samples' dropdown; 'REC starts the logger.' points to the 'Capture' button; 'Once started, the status will show "armed".' points to the 'Status' field; and 'The sensor is waking up by the set vibration threshold.' points to the 'WakeUp' dropdown menu.

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Select the desired number of samples.
Sample rate is set standard to 1,8Hz.

Temp-Logger Setup

Samples : 32 ▾ Status : 0

Capture : 32 WakeUp : off ▾

64

Temp-Logger Download

128

Download : 256 Auto : ☒

Progress : 512 History : [Log](#)

1024

2048

4096

8192

Temp-Logger Setup

Samples : 32 ▾ Status : 0

Capture : WakeUp : off ▾

Temp-Logger Download

Download : [Now](#) Auto : 0.12G

Progress : History : 0.25G

0.50G

0.75G

1.00G

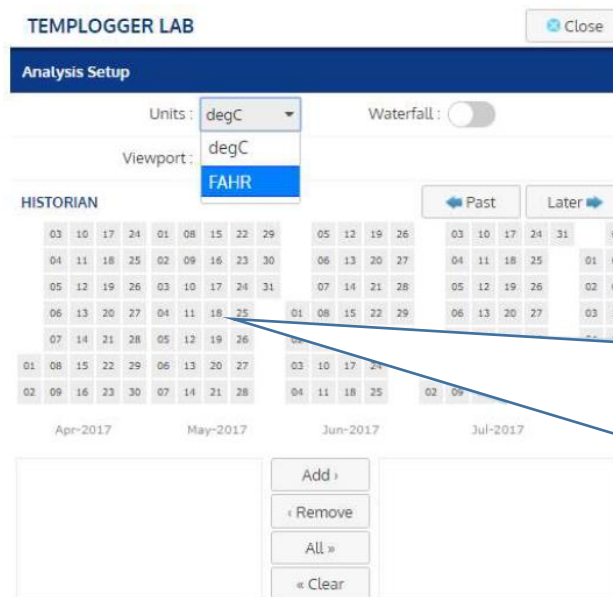
1.50G

2.00G

off

Vibration threshold setup

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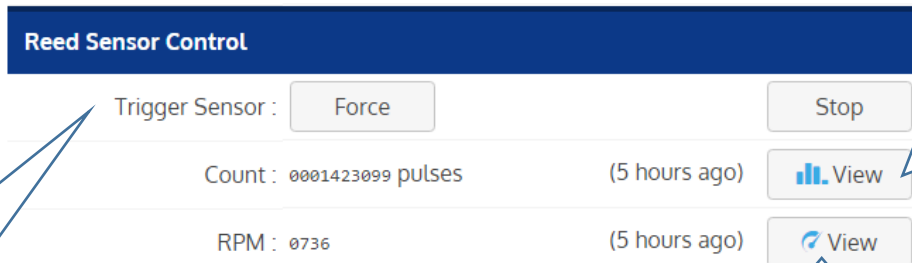


All measurements are stored in the OPC historian and can be viewed individually or compared to others in the waterfall graph. Graphs can be downloaded to Google Sheets and saved as Excel sheets for quick reference.

3.5.4. Reed sensor control (proximity switch sensor)

Pane appears when selecting a sensor device with a reed sensor on board.

The sensor device can be triggered to start measurements as soon as the device is awake (see wakeup interval). Clicking "Force" starts the burst of measurements. "Stop" will interrupt the measurements triggered earlier.



The number of magnetic pulses is counted continuously. When the sensor is active, pulses are shown in this field. The counts are shown in a graph by pressing "View".

Revolutions per minute value based on the count of magnetic pulses. When the sensor is active, rpm values are shown in this field. The rpm values are shown in a graph by pressing "View".

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3.5.5. Vibration sensor control

Pane appears when selecting a sensor device with an acceleration sensor on board.

Select the sampling rate.

Select the number of samples.

By pressing "REC", the vibration measurement is triggered with the set parameters.

MEMS Vibration Setup

Rate : 3200Hz

Axis : Z

Samples : n = 1024

Limit : 16G

Capture : REC

Level :

Select 1, 2, or 3 measurement axes in the dropdown menu.

Select the desired dynamic range of the sensor in the dropdown menu.

Check if vibration level is high enough for download (see section 3.5.5.3).

Select a number of samples to make an antecedent RMS calculation for the vibration measurements. If the RMS value is below threshold, the full sensor download is aborted (see 3.5.5.3).

Progress of automatic download

Vibration Download

Prefetch : n = 128

Highpass : 6Hz

Download :

Threshold : none

Analyse : vLAB

Trending : Stats

Select the high pass cut off frequency to remove the DC component and the low frequency noise in the RMS signal. See section 3.5.5.3 for more information.

By pressing "vLAB", the "VIBRATION LAB" pane opens.

By pressing "Stats", the "STATISTICS LAB" pane opens.

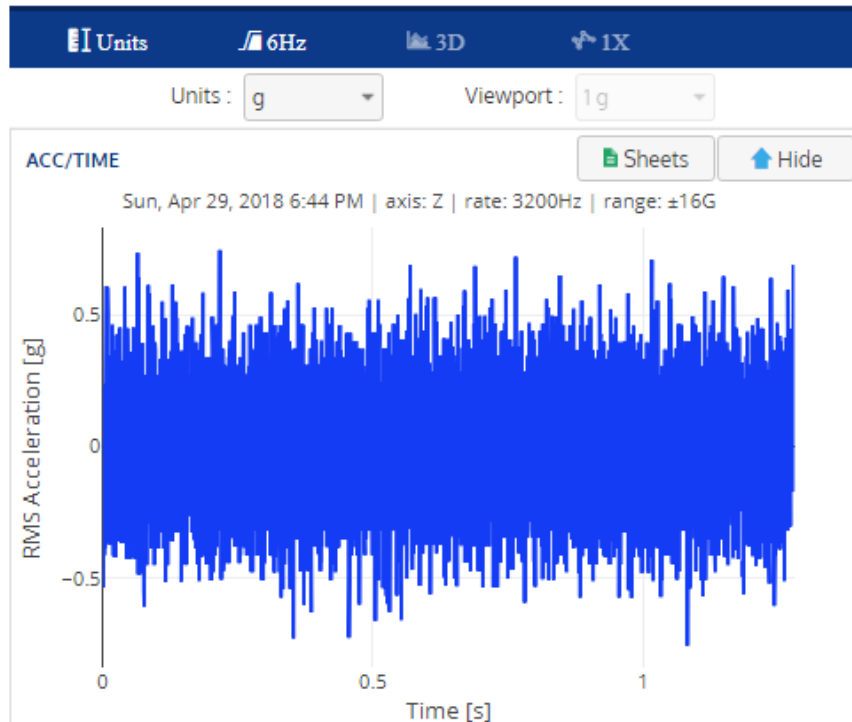
A full measurement is downloaded when the RMS is above threshold. See section 3.5.5.3.

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3.5.5.1. Vibration Lab (vLab)

Vibration Lab pane shows basic analysis of measured vibration signals.

VIBRATION LAB



Measurements saved in the iQunet OPC historian. Click on the date to see the available measurements.

HISTORIAN

← Past → Later

05 12 19 26	03 10 17 24 31	07 14 21 28	04 11 18 25	01 08 15 22 29
06 13 20 27	04 11 18 25	01 08 15 22 29	05 12 19 26	02 09 16 23 30
07 14 21 28	05 12 19 26	02 09 16 23 30	06 13 20 27	03 10 17 24 31
01 08 15 22 29	06 13 20 27	03 10 17 24 31	07 14 21 28	04 11 18 25
02 09 16 23 30	07 14 21 28	04 11 18 25	01 08 15 22 29	05 12 19 26
03 10 17 24	01 08 15 22 29	05 12 19 26	02 09 16 23 30	06 13 20 27
04 11 18 25	02 09 16 23 30	06 13 20 27	03 10 17 24 31	07 14 21 28

Nov-2018 Dec-2018 Jan-2019 Feb-2019

Time Series box: selecting 1 measurement in this box will show the respective time series graph. Select multiple time signals by dragging the mouse pointer. Click "Freq" to add the selected measurements to the box on the right. When only 1 measurement is selected, clicking "Freq" will automatically show the spectrum plot. Click "Bulk" to add all measurements to the box on the right.

TIME SERIES

Sun Apr 29 2018 14:53:42 +0200
Sun Apr 29 2018 16:02:34 +0200
Sun Apr 29 2018 16:17:08 +0200
Sun Apr 29 2018 16:39:39 +0200
Sun Apr 29 2018 18:41:42 +0200
Sun Apr 29 2018 18:42:52 +0200
Sun Apr 29 2018 18:44:56 +0200

> Freq

< Time

>> Bulk

<< None

SPECTRUM

Spectrum box: select 1 measurement to show the spectrum of this measurement. Drag over the list to select multiple items for removing them back to the left box (click "Time"). Click "None" to remove all measurements in this box.

USER MANUAL

"Units" tab

Select graph units: g or mm/s.

Units: 6Hz 3D 1X

Units: g

Viewport: 0.5 g

Select predefined viewport settings to alter graph format.

VIBRATION LAB

"6Hz" High Pass Filter tab

Select the high pass cut off frequency to remove the DC component and the low frequency noise in the RMS signal. See section 3.5.5.3 for more information.

Highpass: 6Hz

1/f detrend: ☐

Enable/disable 1/f flicker noise detrending (only for velocity spectra).

VIBRATION LAB

"2D/3D" tab

Clicking on the "2D" icon changes the graph view from 2D to 3D. The graph now shows the combined spectrum of multiple measurements from the spectrum box in a trending waterfall graph. Clicking on the "3D" icon changes the view back to 2D mode.

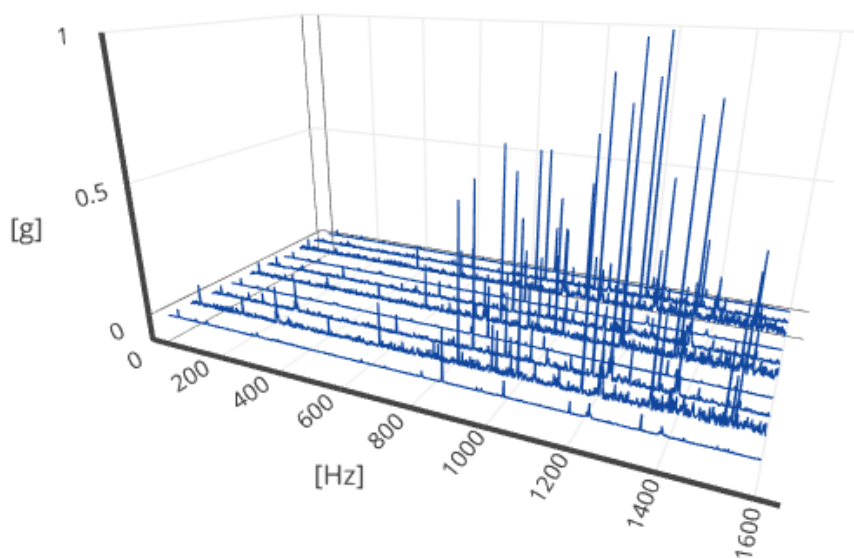
Units: 6Hz 2D 1X

6Hz

1/f detrend: ☐

Sheets

Hide



USER MANUAL

VIBRATION LAB

"1X" averaging tab

Enable/disable DFT averaging and select the number of averages. DFT averaging will decrease the noise level at the cost of a loss in resolution.

1X 0.1ms 0.1Hz 2D 1X

DFT Averaging : off

USER MANUAL

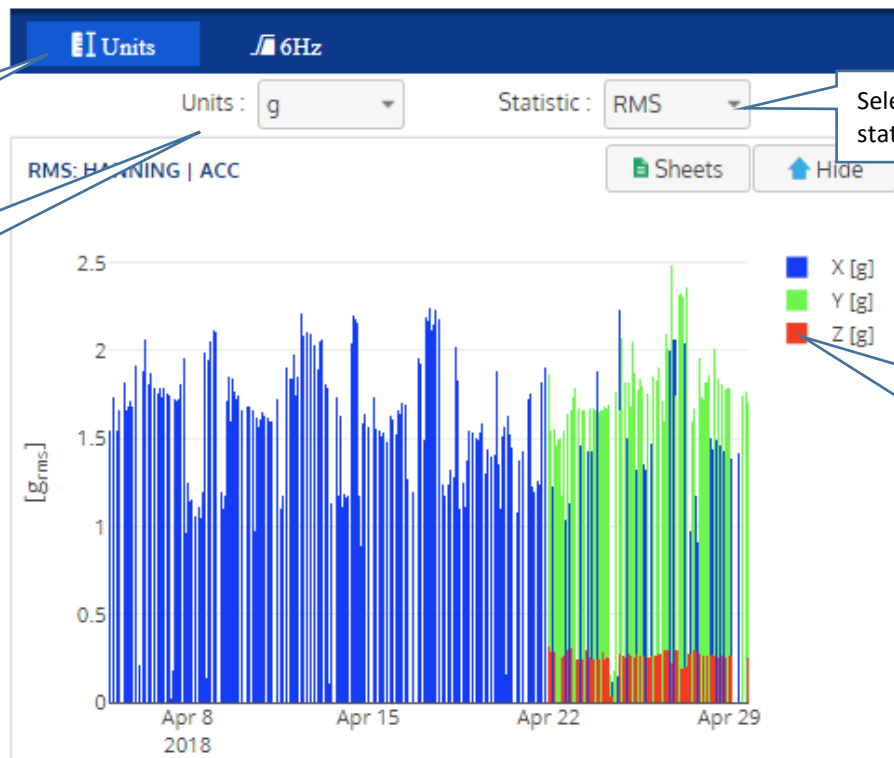
3.5.5.2. Statistics lab

STATISTICS LAB shows the recorded RMS and Kurtosis values during a selected time interval.

"Units" tab

Select the desired units: g or mm/s (acceleration/velocity).

STATISTICS LAB



Select RMS or Kurtosis statistic.

Select or unselect an axis by clicking on the colored square.

Select a start and end date in the proposed lists to create a graph. Click on a date in the historian to select a specific start or end day. Click "Full" to select all available data. Click "Month" to select the data of the past month. Click "Week" to select the data of the past 7 days. Click "Clear" to remove the chosen start and end date.

HISTORIAN

	05	12	19	26		03	10	17	24	31		07	14	21	28		04	11	18	25		0	
	06	13	20	27		04	11	18	25			01	08	15	22	29		05	12	19	26		0
	07	14	21	28		05	12	19	26			02	09	16	23	30		06	13	20	27		0
01	08	15	22	29		06	13	20	27			03	10	17	24	31		07	14	21	28		0
02	09	16	23	30		07	14	21	28			04	11	18	25		01	08	15	22		01	0
03	10	17	24		01	08	15	22	29			05	12	19	26		02	09	16	23		02	0
04	11	18	25		02	09	16	23	30			06	13	20	27		03	10	17	24		03	1
Nov-2018				Dec-2018				Jan-2019				Feb-2019											

START DATE

Sun Apr 22 2018 00:00:00 +0200

Full

31 Month

7 Week

Clear

END DATE

Sun Apr 29 2018 14:53:42 +0200
Sun Apr 29 2018 16:02:34 +0200
Sun Apr 29 2018 16:17:08 +0200
Sun Apr 29 2018 16:39:39 +0200
Sun Apr 29 2018 18:41:42 +0200
Sun Apr 29 2018 18:42:52 +0200
Sun Apr 29 2018 18:44:56 +0200

USER MANUAL



Highpass : 6Hz

Subject to reasonable modifications due to technical advances

USER MANUAL

VIBRATION LAB



Figure 3: prefetch settings in vibration lab

These settings should be understood as follows:

1. The queue interval is 20 minutes, so each 20 minutes a new measurement is started.
2. After a measurement is completed by the sensor, 128 'prefetch' samples (set in the vibration pane) are downloaded from the sensor.
3. The RMS value is calculated on these 128 samples (the "prefetch").
4. If the RMS value is larger than the threshold, the full vibration data is downloaded from the sensor. If not, all axes are suspended.
5. The threshold is 0g (none), so besides the 128 prefetch samples the full 1024 sample data is always downloaded in this case.

A very important parameter is the RMS high pass filter. This filter removes the DC offset (gravity) and the low frequency noise from the RMS signal (see Figure 4).

The RMS value is the power in all frequency bins above the HPF cut-off frequency. The images below (Figure 4 and Figure 5) are taken with no vibrations, just gravity and the sensor noise floor are seen.

However, with very few samples, such as in the case of a prefetch value of 128 samples, part of the dc offset and low frequency noise (plus the startup transient of the compression algorithm) may leak into higher frequency bins, due to the coarse resolution of the DFT. This can be seen below in Figure 5, for 128 prefetch samples. It can be seen here that an HPF value of 3 Hz is too low for a correct RMS value. In this case a better choice would be 6Hz or even higher.

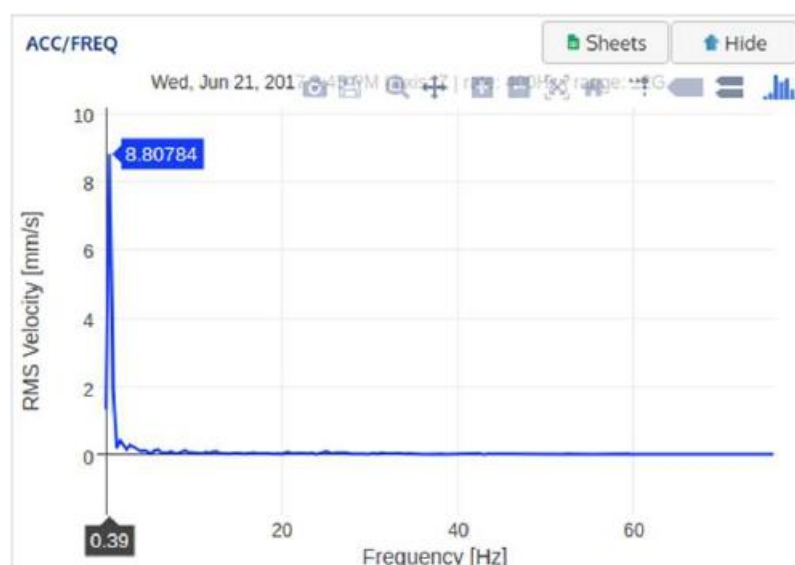


Figure 4: choosing the best setting for the high pass filter

USER MANUAL

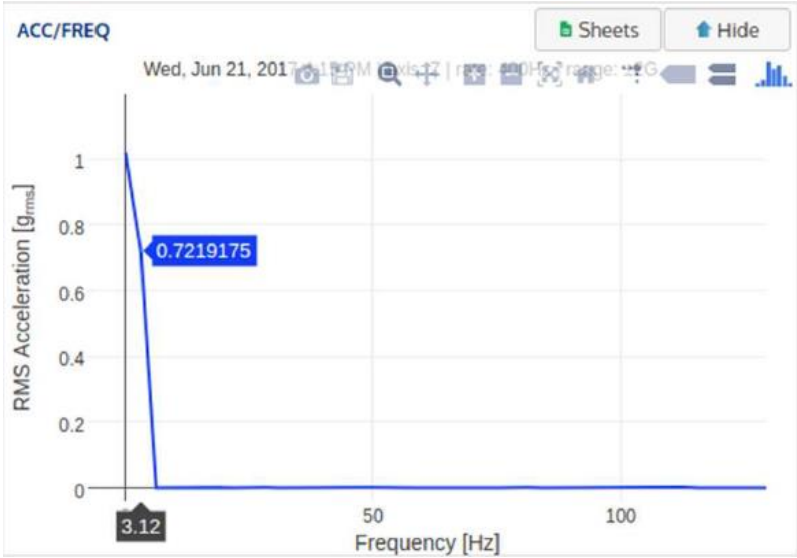


Figure 5: choosing the best setting for the high pass filter

iQunet recommends using the settings in the following table, based on the selected number of prefetch samples.

Table 1: recommended high pass filter settings

Number of prefetch samples	HPF value
256	6Hz or higher
128	12Hz or higher
64	25Hz or higher
32	50Hz or higher

Finally, to conserve battery power, it is important to set the threshold value to something higher than 0g (none) to prevent full downloads when the DUT is not active. It prevents the complete download of the 1024 samples in the example above. The result is that the battery lifetime may be extended at least one order of magnitude, since 10 times less data must be transmitted.

Clicking the information icon will show the flowchart of the Auto Measurement procedure. The values in the flowchart change dynamically with the vibration/prefetch settings in the panes.

Vibration Download

Prefetch : n = 128 → Highpass : 6Hz
Download : ← Threshold : none

Analyse : vLAB Trending : Stats

Figure 6: vibration pane

USER MANUAL

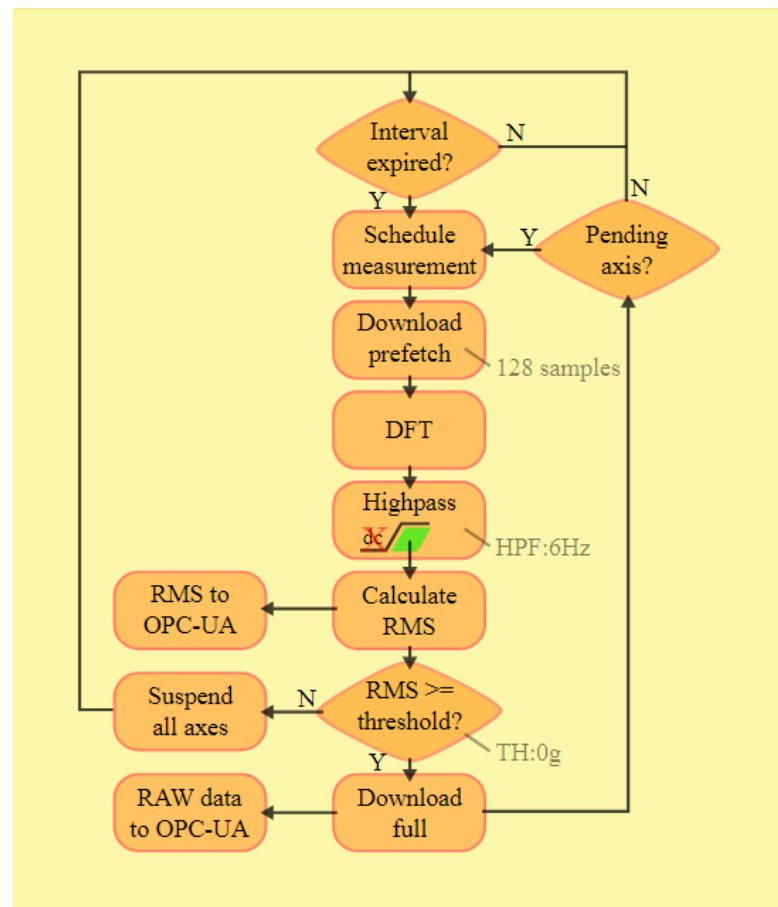
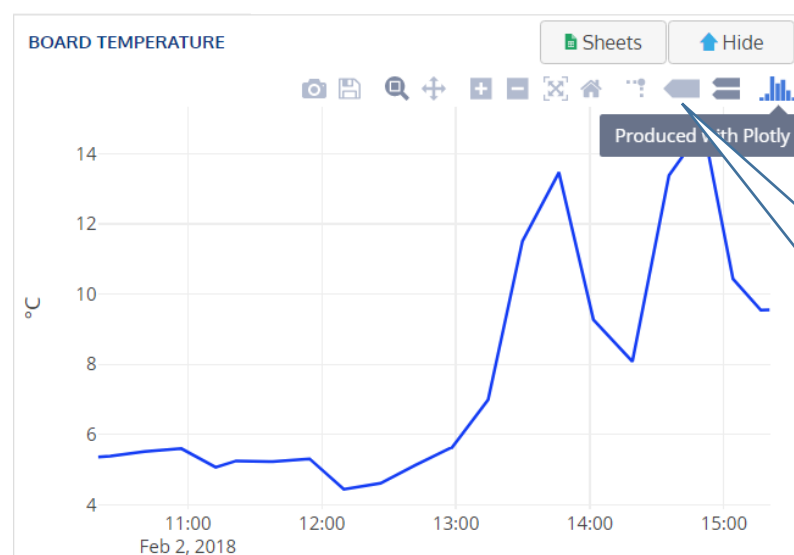


Figure 7: How data is sent to OPC UA and unwanted measurements are suspended (e.g. if the DUT is inactive)

3.6. Content based graph settings



USER MANUAL

4. Export of data

4.1. Using OPC UA functionality

By connecting to the embedded OPC UA server on the iQunet UNIX server installed in connection to the Base Station, you can read the data gathered by the iQunet sensors. Data is stored for a longer period, but the oldest data will be overwritten when the memory is full. It is strongly advised to install an OPC UA historian server in order to save the data permanently. Please contact your network administrator for more information on how to access the data. By connecting an OPC UA client to the running iQunet OPC UA server, you can read the data as they are gathered by the sensors. The graphs in the iQunet dashboard are using the same OPC UA data from the same source. Figure 8 and Figure 9 show the same temperature data on the iQunet dashboard and in the OPC UA client.



Figure 8: OPC UA data (board temperature of sensor 32:70:26:5f) viewed in the iQunet dashboard

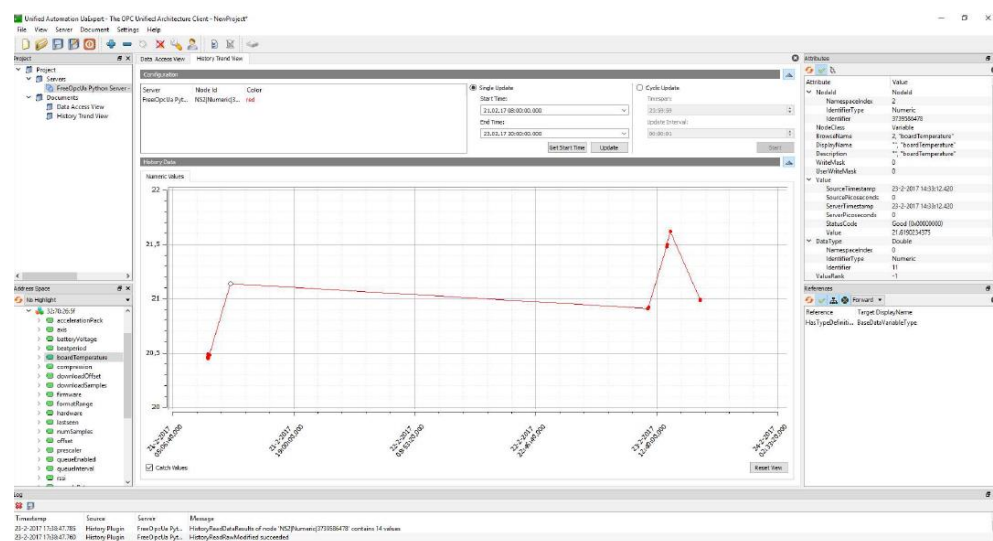


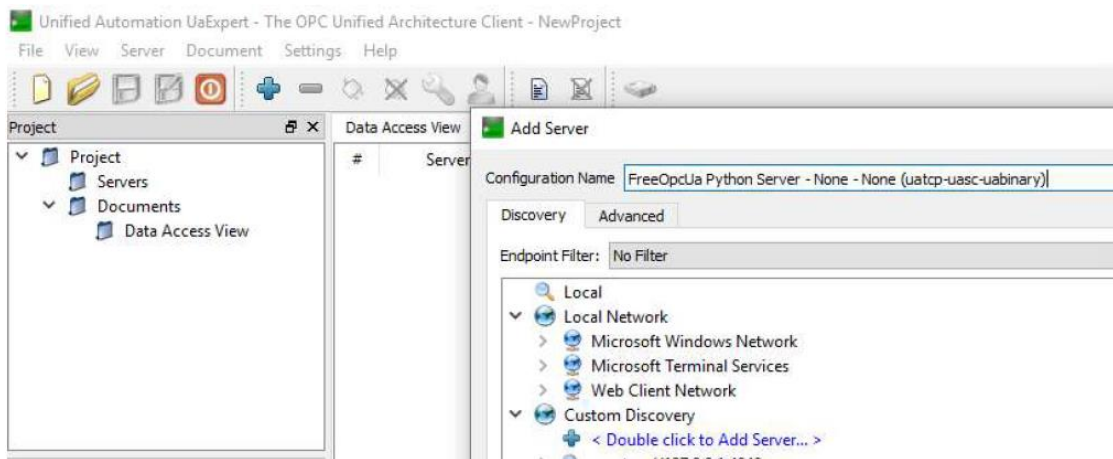
Figure 9: OPC UA data (board temperature of sensor 32:70:26:5f) viewed in an OPC UA client

USER MANUAL

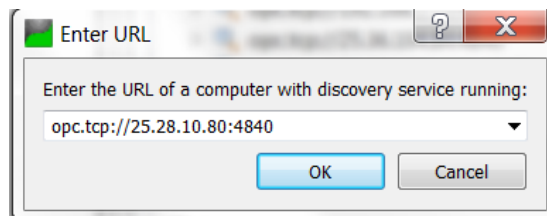
4.1.1. Setting up OPC UA client

For test purposes it is possible to set up an OPC UA client with free OPC UA client software.

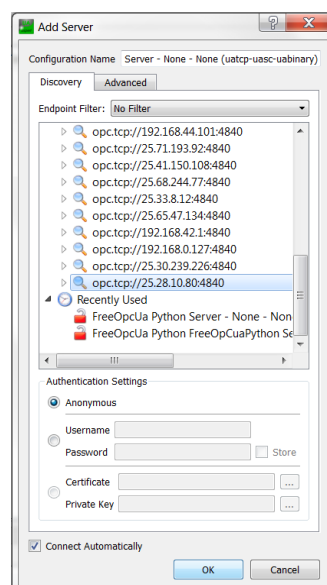
1. Download the free OPC UA client software and install it from the following link: <https://www.unified-automation.com/products/development-tools/uaexpert.html>.
2. Open the UA Expert software and add a new server by selecting “Add” in the Server tab. Double click on “Double click to Add Server”.



3. Edit the URL to e.g. `opc.tcp://25.28.10.80:4840` (see also section 5.2) and click OK.

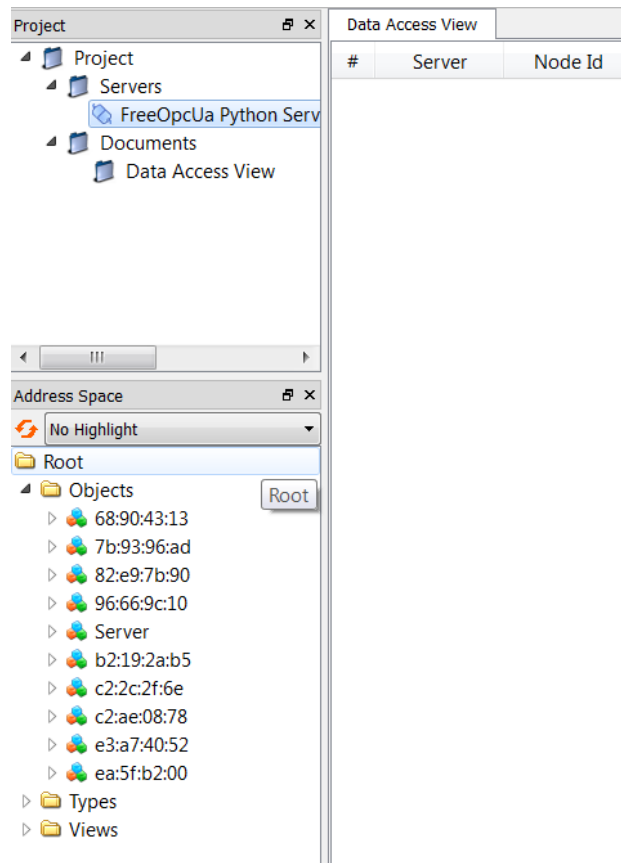


4. Select your added server in the list and click OK. If necessary, accept the certificate of the iQunet server.

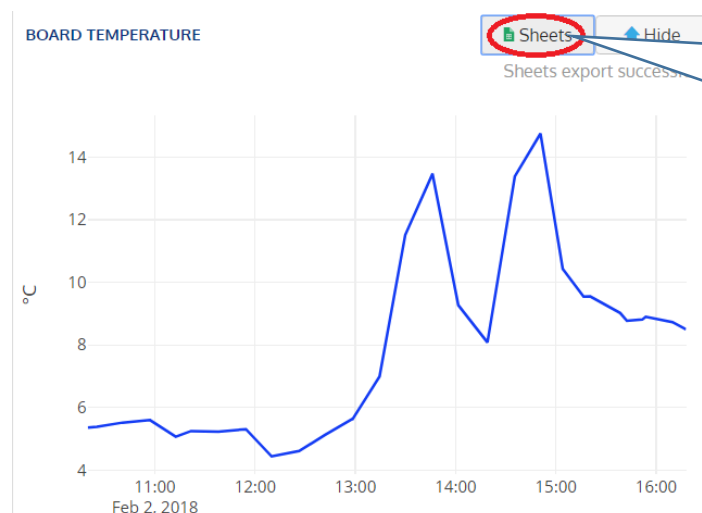


USER MANUAL

5. All connected iQunet sensors will appear in the object list.
6. Browse the attributes of the sensors by clicking on the tags.



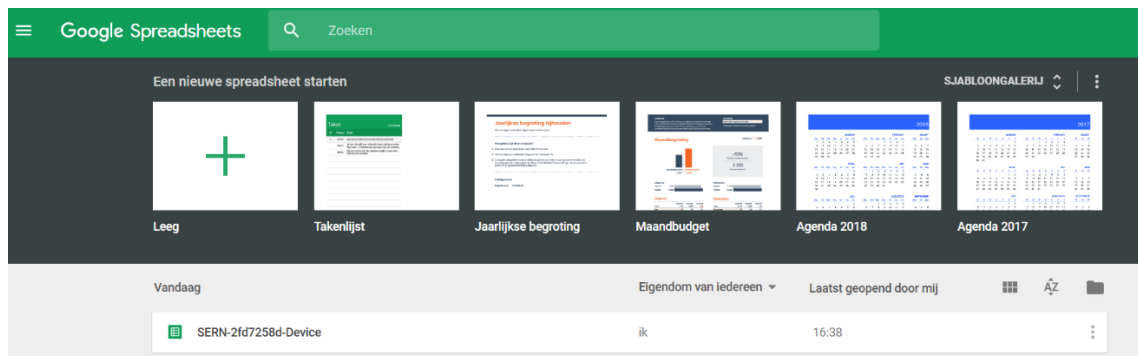
4.2. Using Google Sheets Export functionality



Pressing "Sheets" exports the OPC data to Google Sheets. By pressing the button again, the same sheet is updated with new values.

USER MANUAL

By clicking “Sheets”, a Google spreadsheet is created in the account you used to identify yourself at login.



Go to Google Sheets, and you will see the file you created from this sensor by clicking the “Sheets” button. The data is updated every time you click the “Sheets” button in the same graph. Exporting new data parameters of the same sensor will create new tabs in the same file.

A screenshot of a Google Sheet titled 'SERN-2fd7258d-Device'. The sheet has two columns: 'ISO 8601 Date' and 'boardTemperature'. The data is as follows:

ISO 8601 Date	boardTemperature
2018-02-02 09:11	5,36
2018-02-02 09:21	5,36
2018-02-02 09:21	5,39
2018-02-02 09:41	5,52
2018-02-02 09:51	5,57
2018-02-02 09:51	5,6
2018-02-02 10:11	5,07
2018-02-02 10:21	5,25
2018-02-02 10:31	5,23
2018-02-02 10:31	5,23
2018-02-02 10:51	5,31
2018-02-02 11:01	4,44
2018-02-02 11:21	4,61
2018-02-02 11:21	4,61
2018-02-02 11:41	5,12

Open the file you created, and you can explore the data points or use plug-ins to analyze the data. Share the file with others by clicking the right upper blue button. Shared files will also be updated with new data once created. It is also possible to save the data in Microsoft Excel format.

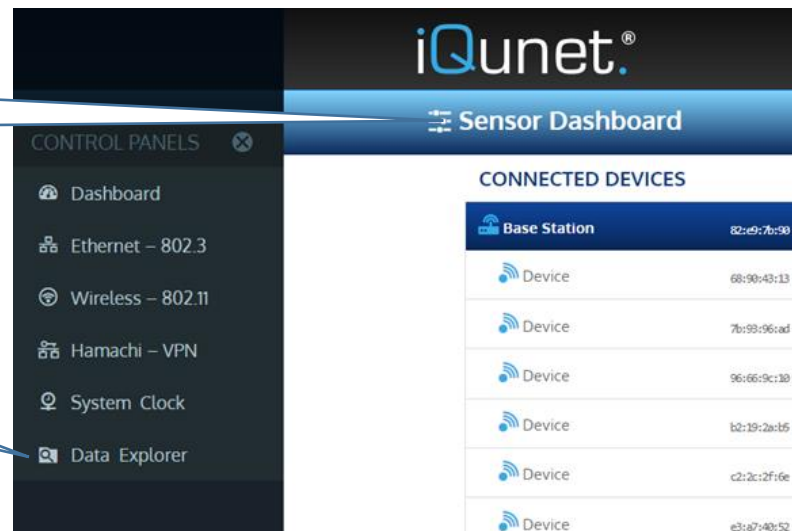
USER MANUAL

4.3. Using Data Explorer Export functionality (as from version 1.2.8)

Open the “Data Explorer” functionality by clicking on the 3 stripes underneath the iQunet logo.

Clicking the 3 stripes under the iQunet logo will open a side pane.

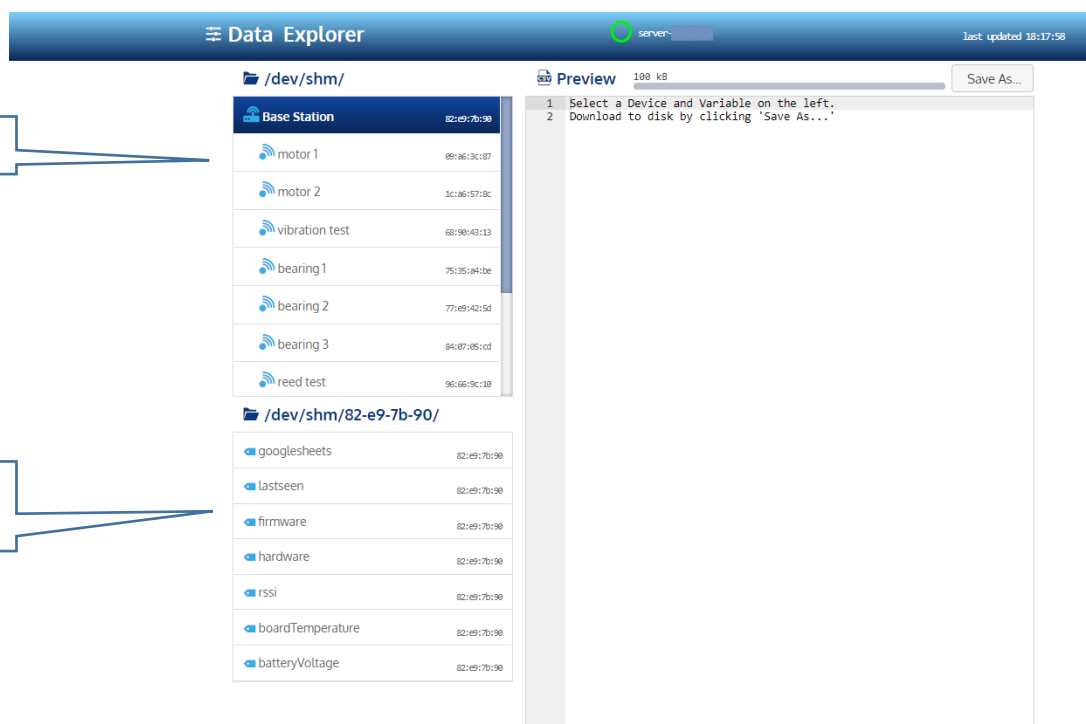
Select “Data Explorer”.



Select a device and according attribute on the left.

Select a device.

Select a variable/attribute.



The data for this attribute will be loaded in the text box on the right in a csv format. Click on “Save As...” to download the data as a .csv file. For large amounts of data, the data loading might take a few minutes.

USER MANUAL

The screenshot shows the 'Data Explorer' interface. On the left, a file tree under '/dev/shm/' lists various sensors: Base Station, motor 1, motor 2, vibration test (selected), bearing 1, bearing 2, bearing 3, and reed test. Below this, a sub-tree for '/dev/shm/68-90-43-13/' lists files like googlesheets, lastseen, firmware, hardware, rssi, batteryVoltage (selected), boardTemperature, queueEnabled, and sumSamples. The main area displays a CSV file '68-90-43-13_batteryVoltage.csv' (4.3 KB) with a 'Save As...' button circled in red. The table contains 49 rows of data, each with a timestamp and a numerical value.

1	2018-06-18T15:40:27.776000+00:00,	2.724
2	2018-06-18T15:25:04.537000+00:00,	2.709
3	2018-06-18T15:18:13.005000+00:00,	2.703
4	2018-06-18T15:03:22.120000+00:00,	2.703
5	2018-06-18T15:00:30.359000+00:00,	2.703
6	2018-06-18T15:00:29.211000+00:00,	2.703
7	2018-06-18T14:44:39.740000+00:00,	2.703
8	2018-06-18T14:44:38.588000+00:00,	2.703
9	2018-06-18T14:27:50.056000+00:00,	2.703
10	2018-06-18T14:27:48.910000+00:00,	2.703
11	2018-06-18T14:11:59.753000+00:00,	2.709
12	2018-06-18T14:08:08.256000+00:00,	2.709
13	2018-06-18T13:52:18.872000+00:00,	2.709
14	2018-06-18T13:36:29.745000+00:00,	2.717
15	2018-06-18T13:20:41.436000+00:00,	2.731
16	2018-06-18T13:04:52.799000+00:00,	2.738
17	2018-06-18T12:49:32.622000+00:00,	2.738
18	2018-06-18T12:46:28.374000+00:00,	2.731
19	2018-06-18T12:45:42.977000+00:00,	2.724
20	2018-06-18T12:34:52.925000+00:00,	2.724
21	2018-06-18T12:32:01.285000+00:00,	2.738
22	2018-06-18T12:31:15.830000+00:00,	2.724
23	2018-06-18T12:23:24.693000+00:00,	2.731
24	2018-06-15T06:24:53.761000+00:00,	2.774
25	2018-06-15T06:24:43.292000+00:00,	2.774
26	2018-06-11T12:13:24.414000+00:00,	2.767
27	2018-06-11T12:12:11.506000+00:00,	2.774
28	2018-06-11T12:04:07.473000+00:00,	2.745
29	2018-06-11T12:01:15.695000+00:00,	2.745
30	2018-06-11T11:59:23.784000+00:00,	2.745
31	2018-06-11T11:56:32.057000+00:00,	2.745
32	2018-06-08T11:34:53.351000+00:00,	2.826
33	2018-06-08T11:19:05.021000+00:00,	2.826
34	2018-06-08T11:03:16.426000+00:00,	2.819
35	2018-06-08T10:47:26.847000+00:00,	2.819
36	2018-06-08T10:31:37.379000+00:00,	2.819
37	2018-06-08T10:15:47.466000+00:00,	2.819
38	2018-06-08T09:59:57.914000+00:00,	2.819
39	2018-06-08T09:44:08.514000+00:00,	2.826
40	2018-06-08T09:38:17.070000+00:00,	2.826
41	2018-06-08T09:22:27.415000+00:00,	2.834
42	2018-06-08T09:06:53.904000+00:00,	2.842
43	2018-06-08T08:51:22.240000+00:00,	2.834
44	2018-06-08T08:45:27.089000+00:00,	2.819
45	2018-06-08T08:44:58.936000+00:00,	2.819
46	2018-05-17T09:35:24.834000+00:00,	2.826
47	2018-05-17T09:24:03.957000+00:00,	2.834
48	2018-05-17T09:24:00.315000+00:00,	2.834
49	2018-04-16T16:34:13.751000+00:00,	2.789

4.4. Using APIs (as from version 1.1.16)

4.4.1. General

GraphQL is a query language for APIs and a server-side runtime for executing queries by using a type system that is defined for the data. GraphQL isn't tied to any specific database or storage engine and is instead backed by the existing code and data. GraphQL is typically served over HTTP via a single endpoint which expresses the full set of capabilities of this service. This contrasts with the REST APIs which expose a suite of URLs each of which exposes a single resource. Many different programming languages support GraphQL. A GraphQL spec was open sourced in 2015 and is now available in many environments and used by teams of all sizes. Some introduction can be found on <http://graphql.org/>.

Features:

- Syntax highlighting
- Intelligent type ahead of fields, arguments, types, and more
- Real-time error highlighting and reporting
- Automatic query completion
- Run and inspect query results

USER MANUAL

4.4.2. Starting with APIs

Before starting, we strongly recommend reading the “learn” section on the GraphQL website:

<http://graphql.org/learn/>.

All APIs can be reached via <http://xxx.xxx.xxx.xxx:8000/graphql> where “xxx.xxx.xxx.xxx” refers to the current iQunet server IP address (see section 5.3). Please note that all documentation is included and can be found in the Documentation Explorer on the right-hand side.

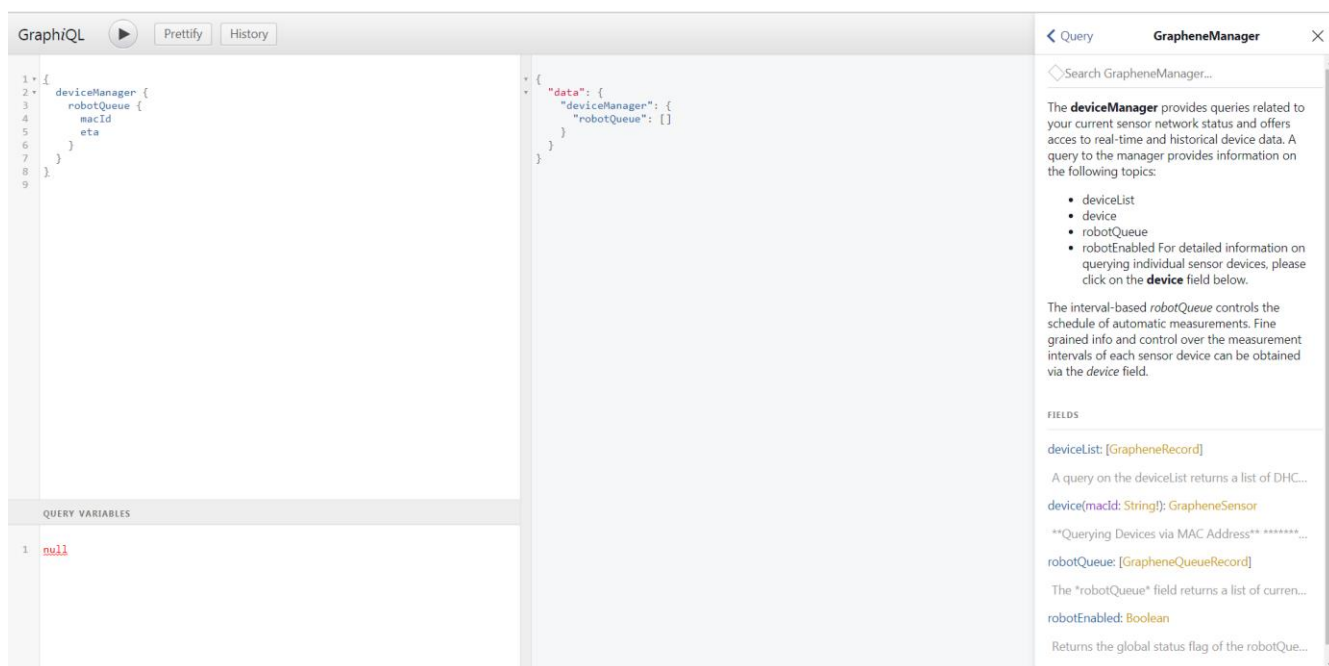


Figure 10: The iQunet graphical interactive in-browser GraphQL IDE (Integrated Development Environment)

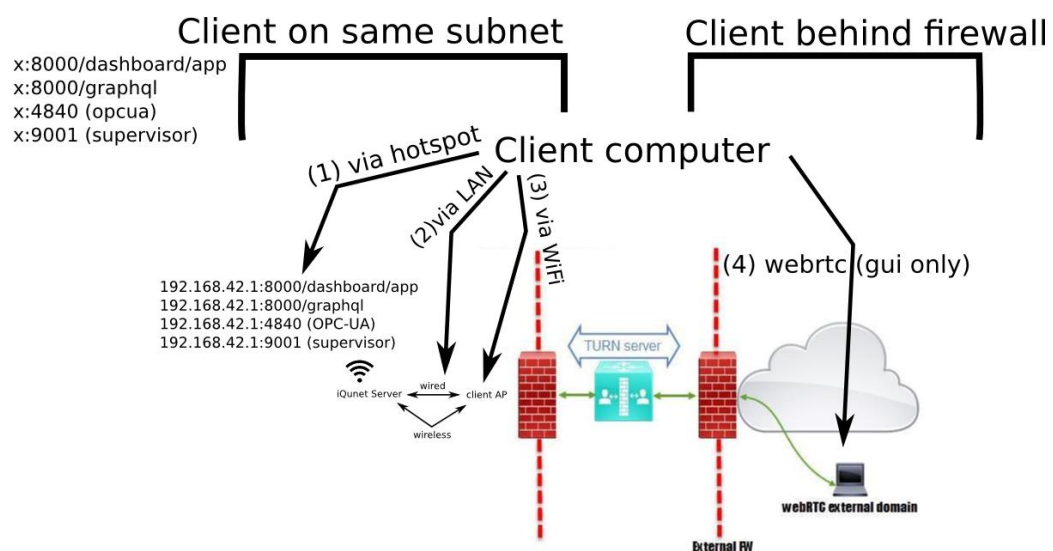
Remark: it is also possible to use a client library to access the GraphQL server. A list of all available GraphQL libraries can be found here: <https://graphql.github.io/code/>.

USER MANUAL

5. Connection to the iQunet server

After connecting the iQunet server to the 230V mains and if available to the network, there are several options to connect to the server (see figure below):

1. Via WiFi hotspot (section 5.1). The IP address of the server is always 192.168.42.1. An active network connection is optional.
2. Via local/direct access (LAN) where server and client server are on the same subnet (section 5.2).
3. Via WiFi /WLAN (section 5.3). An active wireless network connection is required.
4. Via WebRTC (rtc.iqunet.be). This only works for the dashboard GUI. An active network connection is required. This procedure has already been described in section A.
5. Via Hamachi commercial VPN (section 5.4). An active Hamachi network is required.



On all listening interfaces, the ports are fixed: 8000 for the dashboard and GraphQL, 4840 for OPC UA, 9001 for the supervisor (pw: admin/admin) and port 22 for SSH.

5.1. Hotspot (as from version 1.2.1)

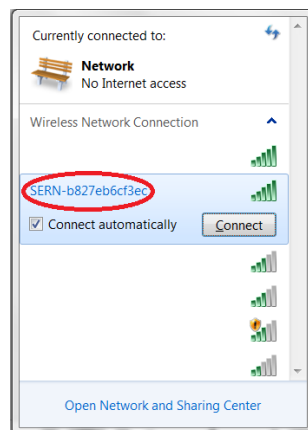
5.1.1. Connect to hotspot

A WiFi hotspot is automatically created once the iQunet server is connected to the 230V mains (even without connection to the network). A reboot of the server can be necessary if the hotspot does not become active immediately.

Remark: if the "Auto Off" option of the hotspot is enabled; the hotspot will only become active if there is no other active network connection available (wired or wireless). See section 5.1.2 for more info on the "Auto Off" mode.

USER MANUAL

To use the hotspot's WiFi network on your PC, select the hotspot in your network center (SERN-xxxxxxxxxxxx) and click Connect. The hotspot's password is the Sensor Proxy ID (also used for the connection to WebRTC in section A). This ID is written on your UNIX server (e.g. server-xxxxxxx).



The IP address of the server is always 192.168.42.1. Once connected to the hotspot network, you can use this IP address to make a direct access connection to the server by browsing to <http://192.168.42.1:8000/dashboard/app> (see section 5.2 for more information). You can also use the server's IP address to set up an OPC UA client or to access the GraphQL APIs (see sections 4.1.1 and 4.4.2).

When the iQunet server is connected to the network, you can also connect via WebRTC as explained in section A.

5.1.2. Turn off hotspot

Connect to the iQunet Sensor Dashboard via WebRTC (see section A) or via direct access (<http://192.168.42.1:8000/dashboard/app>). Click on the 3 bars below the iQunet logo and open the "Wireless – 802.11" panel to see the hotspot settings.

Clicking the 3 stripes under the iQunet logo will open a side pane.

Select "Wireless – 802.11" to see the hotspot settings.



USER MANUAL

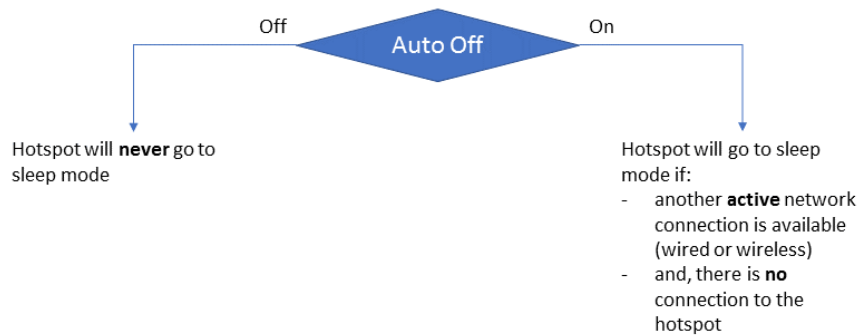
In the “WIFI HOTSPOT” section you can find the state of the hotspot (active/offline) and the hotspot’s network name (SERN-xxxxxxxxxx). Click on the hotspot’s name (SERN-xxxxxxxxxx) to see more details on the hotspot network.

The screenshot displays the iQunet web interface. At the top, the iQunet logo is on the left, and navigation links (Login, iQunet.com, Products, Solutions, Contact) are on the right. Below the header, the main content area is divided into two columns. The left column contains the 'WIRELESS STATUS' section, which lists network details: Network type (802.11i-wireless), Access point (inactive), Interface (wlan0), Channel (-), Link rate (-), Link quality (-), and IPv4 (-). Below this is a 'SURVEY' section with a 'Rescan' button and a table of detected networks. The right column contains the 'PROFILE' section, which is divided into four layers: Layer 1 - Hardware (Access point: SERN-b827ebf1b575, Auto Off: toggle), Layer 2 - Security (Encryption: toggle, Method: WPA 1/2 (Preshared He...), Preshared Key: *****), Layer 3 - IPv4 Address (Auto (DHCP): toggle, Static IP: 192.168.42.1, Netmask: 255.255.255.0, Gateway: 192.168.42.1), and Layer 3 - DNS Configuration (Auto (DHCP): toggle, DNS Server: 192.168.1.1). At the bottom of the interface is the 'WIFI HOTSPOT' section, which shows a list of hotspots. The first hotspot, 'SERN-b827ebf1b575', is highlighted with a red circle and labeled as '[Active]'.

To turn off the hotspot, the user can activate the auto sleep mode of the hotspot by enabling “Auto Off” in the hardware layer. Slide the slider to the right and click the Save button in the upper right corner. When enabled, the hotspot will automatically turn off after maximum 10 minutes if another active wired or wireless network connection is available. If the other network connection drops down, the hotspot will become active again.

Important remark: the hotspot will not turn off when there is still someone connected to it.

USER MANUAL



The other network settings shown below are not user adaptable.

PROFILE
Save

Layer 1 - Hardware

Access point : SERN-b827ebf1b575
Auto Off : ☐

Interface : uap0
Channel : 6

Layer 2 - Security

Encryption : ☐

Method : WPA 1/2 (Preshared He...

Preshared Key : *****

Layer 3 - IPv4 Address

Auto (DHCP) : ☐

Static IP : 192 . 168 . 42 . 1

Netmask : 255 . 255 . 255 . 0

Gateway : 192 . 168 . 42 . 1

Layer 3 - DNS Configuration

Auto (DHCP) : ☐

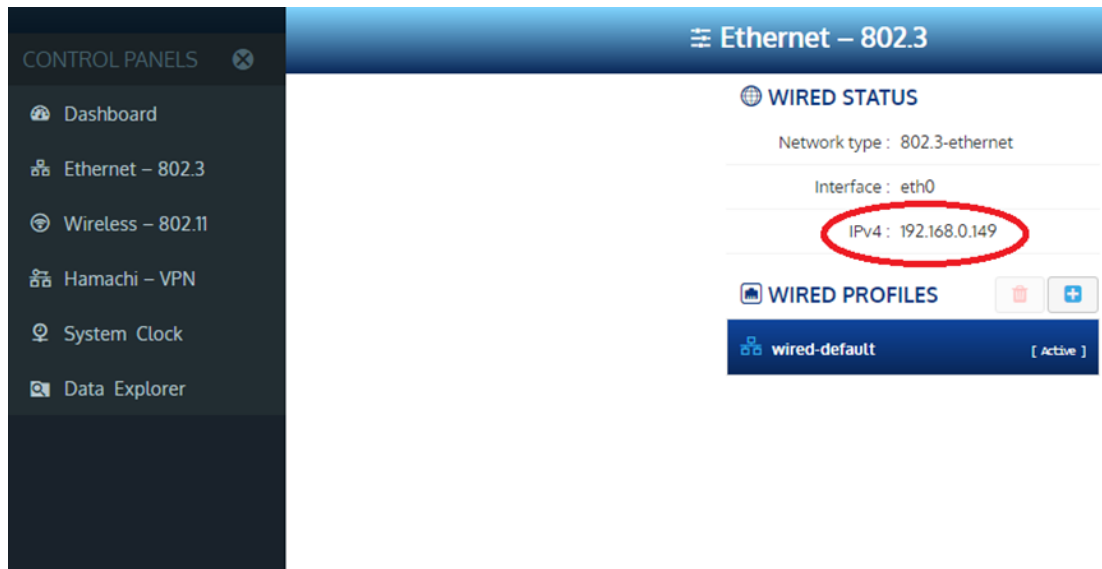
DNS Server : 192 . 168 . 1 . 1

DNS Server : . . .

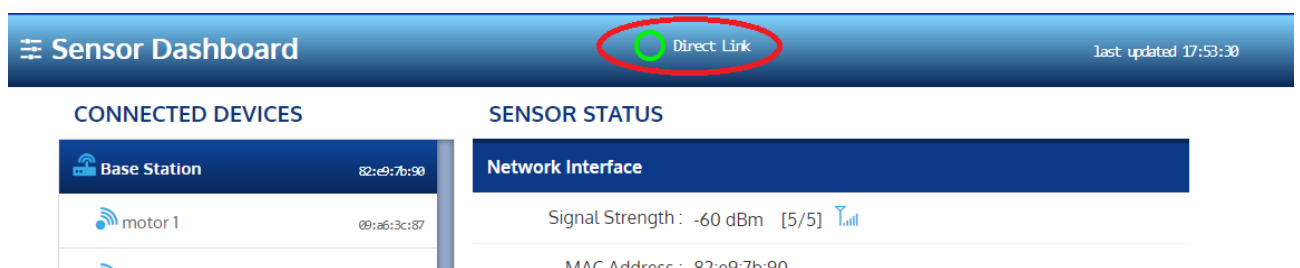
DNS Server : . . .

USER MANUAL

5.2. Direct Access setup (local access/intranet)



1. Click the 3 bars below the iQunet logo and select the “Ethernet – 802.3” panel.
2. Copy the network IPv4 address of the running iQunet server.
3. Copy the address into <http://xxx.xxx.xxx.xxx:8000/dashboard/app> and open it in your Chrome browser.
4. From a computer in the SAME network and subnetwork you will now have direct access to the iQunet server.
5. If the connection is established, “Direct Link” will appear next to the green circle instead of the server name “server-xxxxxxx”.



5.3. WIFI setup (as from version 1.1.16)

Important remark 1: for software versions older than 1.2.6, a wired connection to the internet is needed, either via a network in the neighborhood, or via a wired mobile MiFi connection before changing the settings of the iQunet server to WiFi. Once the iQunet Sensor Dashboard is reached on the iQunet server, a WiFi connection can be established and the wired connection can be disconnected.

From software version 1.2.6 on you can also use the hotspot functionality to establish a wireless connection. In this case, a wired internet connection is not required.

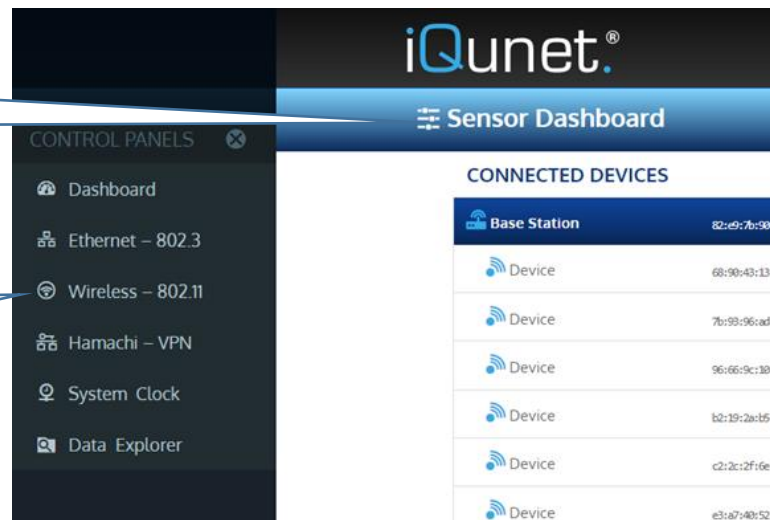
USER MANUAL

Important remark 2: if you are using multiple simultaneous connections, the Ethernet interface will have precedence over the WiFi interface. The Ethernet interface is the preferred connection. The WiFi interface can be used if Ethernet is not available.

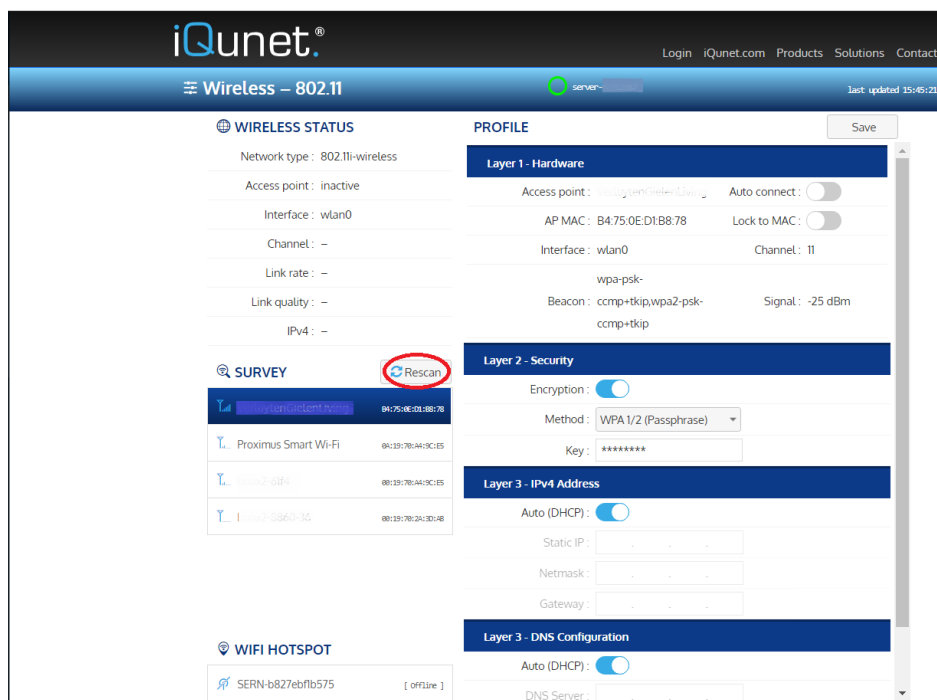
Browse to the iQunet Sensor Dashboard via WebRTC (see section A) or via direct access to the hotspot (<http://192.168.42.1:8000/dashboard/app>). For more information on the connection to the hotspot see section 5.1.1. Open the “Wireless – 802.11” settings by clicking on the 3 stripes under the iQunet logo.

Clicking the 3 stripes under the iQunet logo will open a side pane.

Select “Wireless – 802.11” to change the settings.



Rescan for wireless networks in the “SURVEY” section. Select the wireless network you want to connect with. Enable the encryption.



USER MANUAL

PROFILE Save

Layer 1 - Hardware

Access point : Auto connect : ☐

AP MAC : B4:75:0E:D1:B8:78 Lock to MAC : ☐

Interface : wlan0 Channel : 1

wpa-psk-

Beacon : ccmp+tkip,wpa2-psk-ccmp+tkip Signal : -27 dBm

Layer 2 - Security

Encryption : ☐

Method :

Layer 3 - IPv4 Address

Auto (DHCP) : ☒

Static IP :

Netmask :

Gateway :

Layer 3 - DNS Configuration

Auto (DHCP) : ☒

DNS Server :

DNS Server :

DNS Server :

Enable Encryption and select the used encryption method. Fill in the password key (and the identity) of the network.

Enable Auto Connect.

Now press the "Save" button on top of the pane.

Enable the "Auto Off" option of the hotspot in the "Wireless – 802.11" control panel so the hotspot will be disabled immediately when a WiFi connection is detected (see section 5.1.2 for more information on how to turn off the hotspot).

If you are using a wired connection, disconnect the Ethernet cable.

Put the iQunet server with the connected Base Station on the desired spot in reach of the selected WiFi network.

USER MANUAL

5.4. Hamachi VPN (as from version 1.2.12)

In the “Hamachi – VPN” section you can join an existing VPN network. Open the “Hamachi - VPN” panel.

Clicking the 3 stripes under the iQunet logo will open a side pane.

Select “Hamachi - VPN”.

Sensor Dashboard

CONTROL PANELS ✕

- 🏠 Dashboard
- 🌐 Ethernet – 802.3
- 📶 Wireless – 802.11
- 🔗 Hamachi – VPN
- 🕒 System Clock
- 🔍 Data Explorer

CONNECTED DEVICES

Base Station	MAC
Device	68:90:43:13
Device	7b:99:96:ad
Device	96:66:9c:10
Device	b2:19:2a:b5
Device	c2:2c:2f:6e
Device	e3:a7:40:52

To create a Hamachi VPN network, browse to <https://secure.logmein.com/central/Central.aspx> and create an account or log in with your account credentials.

← → ↻
https://accounts.logme.in/login.aspx?clusterid=10&returnurl=https%3A%2F%2Fsecure.logmein.com%2Ffederated%2Floginso.aspx&headerframe=https%3A%2F%2Fsecure.logmein.com%2Fcentral/Central.aspx

Log in or [sign up](#)

LogMeIn ID:

✉

🔒

Forgot your password?

☐ I trust this device. Keep me logged in.

Log in

Back

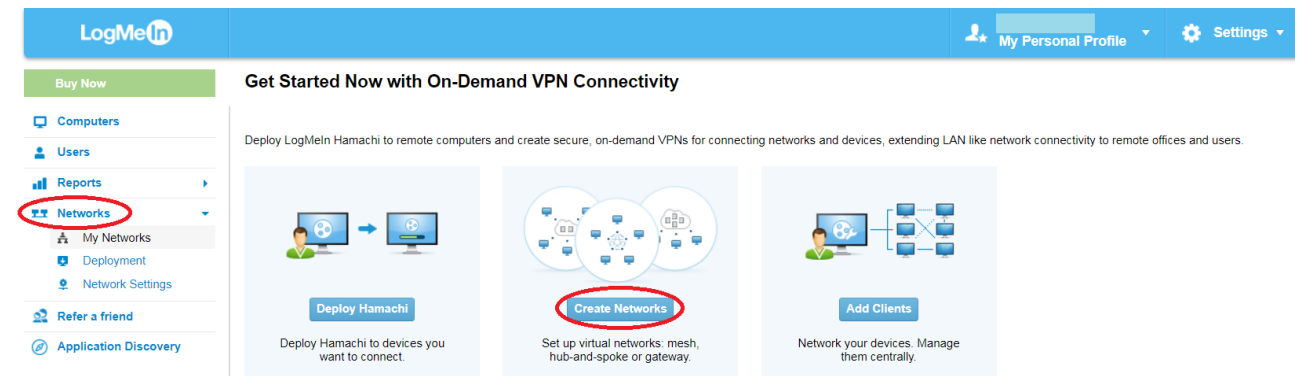
DID YOU KNOW?

Your LogMeIn ID gives you access to these great LogMeIn products: Cubby, join.me, Central, Pro.

[Log in to your Rescue account](#)

Go to the Networks section and click “Create Networks” if this is the first network you create or “Add Network” for the following networks.

USER MANUAL



LogMeIn My Personal Profile Settings

Buy Now

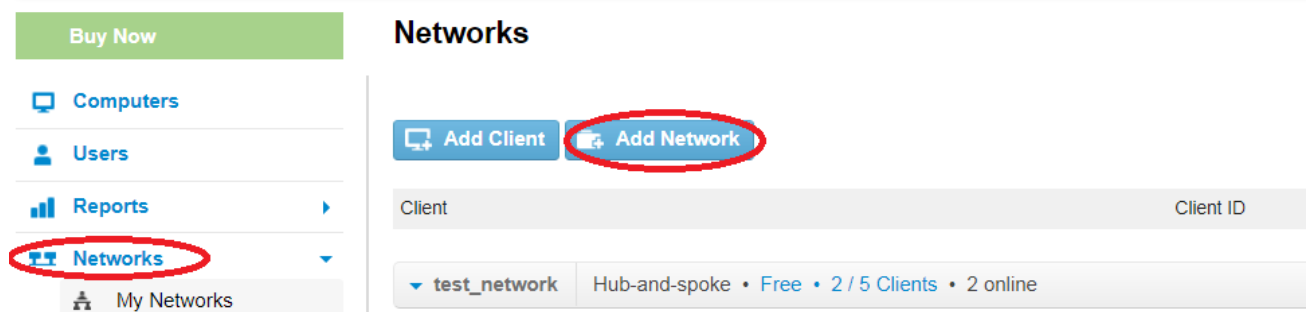
Get Started Now with On-Demand VPN Connectivity

Deploy LogMeIn Hamachi to remote computers and create secure, on-demand VPNs for connecting networks and devices, extending LAN like network connectivity to remote offices and users.

Deploy Hamachi
Deploy Hamachi to devices you want to connect.

Create Networks
Set up virtual networks: mesh, hub-and-spoke or gateway.

Add Clients
Network your devices. Manage them centrally.



Buy Now

Networks

Add Client **Add Network**

Client	Client ID
test_network	Hub-and-spoke • Free • 2 / 5 Clients • 2 online

Fill out the network name. Select “Hub-and-spoke” as the network type and click Continue.

Add Network (Step 1)

Network type and name

Network name:
test_network

Network description (optional):

Network type:

☐ Mesh ☒ Hub-and-spoke ☐ Gateway

Hub-and-spoke Network
This network type provides more strict control over network members in terms of who is connected to whom. Hubs (servers) are connected to everyone else, spokes (workstations) are connected only to hubs, but not to each other. It is a typical choice for simple corporate use cases, where a workstation needs connection to servers only.

Continue **Cancel**

USER MANUAL

Check the “Must be approved” option in the “Join Requests” section and click Continue.

Add Network (Step 2)**Join Requests**

- ☐ Accept automatically
☒ **Must be approved**
☐ Members can be added on the web only

Network password

- ☐ A password is required to join this network

Network password

Confirm password

Clients requesting to join the network must enter the password. If you do not set a password, we recommend setting the Join Request behavior to **Must be approved** or **Members can be added on the web only**.

Subscription

- ☒ Free (up to 5 members) - Never expires ▾
☐ Buy Standard (up to 32 members per network) - €44.00/year
☐ Buy Premium (up to 256 members per network) - €179.00/year
☐ Buy Multi-network (up to 256 members, any number of networks) - €269.00/year

[Continue](#)[Cancel](#)

Click Continue.

Add Network (Step 3)

Network: test_network



Choose the computers that will act as hubs in this network.

[Read more](#)

Hubs are typically the file servers or mail servers in your physical network. Select hubs from the list of clients attached to your account. Hubs can be added or removed at any time.

Select the hubs

No eligible members to list.


[Continue to Add Client](#)[Continue](#)[Skip this](#)[Cancel](#)

Click Finish.

USER MANUAL


Add Network (Step 4)

Network: test_network

 **Select clients to join this network as spokes.**
Clients from other accounts can also request to join this network from the client interface.
[Read more](#)

Select the spokes

No eligible members to list.

 Continue to Add Client

Finish **Cancel**

Your VPN network is now created. You can find the ID by editing the network.

Edit Network

test_network ▾

Members [Join Requests](#) [Settings](#) [Password](#) [Subscription](#) [Delete](#)

Settings saved.

ID	Name	Type	Description
393-966-144	<input type="text" value="test_network"/>	Hub-and-spoke	<input type="text"/>

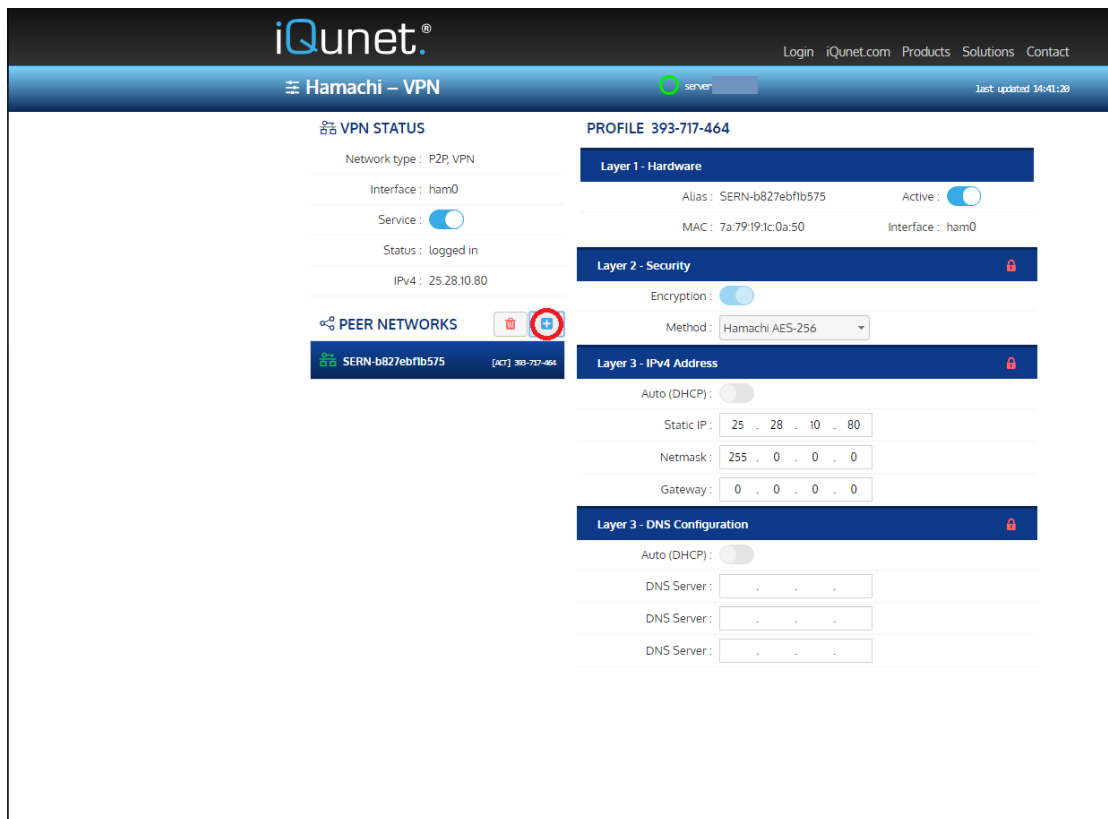
Use the ID when joining this network from the Hamachi client.

No members to show or add to this network.

Save **Cancel**

Add the VPN network in the iQunet sensor dashboard by clicking the plus sign in the “Hamachi – VPN” panel.

USER MANUAL



iQunet.® Login iQunet.com Products Solutions Contact

Hamachi – VPN server last updated 34:41:29

VPN STATUS

Network type : P2P, VPN

Interface : ham0

Service : ☒

Status : logged in

IPv4 : 25.28.10.80

PEER NETWORKS

SERN-b827ebf1b575 [ACT] 393-717-464

PROFILE 393-717-464

Layer 1 - Hardware

Alias : SERN-b827ebf1b575 Active : ☒

MAC : 7a:79:19:1c:0a:50 Interface : ham0

Layer 2 - Security

Encryption : ☒

Method : Hamachi AES-256

Layer 3 - IPv4 Address

Auto (DHCP) : ☐

Static IP : 25 . 28 . 10 . 80

Netmask : 255 . 0 . 0 . 0

Gateway : 0 . 0 . 0 . 0

Layer 3 - DNS Configuration

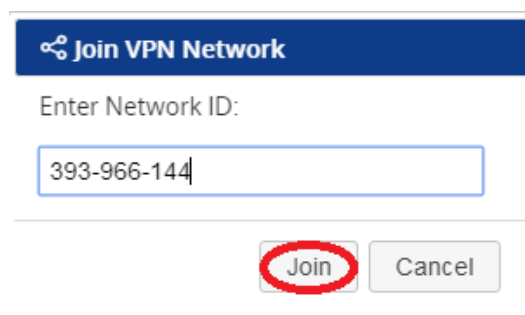
Auto (DHCP) : ☐

DNS Server : . . .

DNS Server : . . .

DNS Server : . . .

Enter the network ID and click the Join button.



Join VPN Network

Enter Network ID:

393-966-144

Join Cancel

Go back to the Hamachi Logmein website and accept the iQunet server as a client in the “Join Requests” section of the created network.

USER MANUAL

Edit Network

test_network ▾

[Members](#) [Join Requests](#) [Settings](#) [Password](#) [Subscription](#) [Delete](#)

Accept	Reject	Client Name	Client ID
<input checked="" type="radio"/>	<input type="radio"/>	SERN-b827ebf1b575	227-779-324

[Save](#) [Cancel](#)

The iQunet server will now appear in the Members section of the VPN network.

Edit Network

test_network ▾

[Members](#) [Join Requests](#) [Settings](#) [Password](#) [Subscription](#) [Delete](#)

ID	Name	Type	Description
393-966-144	test_network	Hub-and-spoke	

Use the ID when joining this network from the Hamachi client.

[View current members](#) | [Add/Remove members](#)

Name	Hub	Spoke	Client ID	Tag	Details
SERN-b827ebf1b575 [Guest]		•	227-779-324		Edit

[Save](#) [Cancel](#)

Reselect the “Hamachi – VPN” control panel in the left pane on the iQunet sensor dashboard and the VPN network will appear in the list of peer networks. Remark: the list of peer networks is not updated automatically since Hamachi doesn’t provide any sign or warning when changes have been applied. For this reason, you need to reopen the “Hamachi -VPN” panel to update the list of peer networks.

USER MANUAL

Hamachi – VPN

VPN STATUS

Network type : P2P, VPN


Interface : ham0


Service : ☒

Status : logged in

IPv4 : 25.28.10.80

PEER NETWORKS

 SERN-b827ebf1b575 [ACT] 393-717-464

 test_network [ACT] 393-966-144

Set the SERN-xxxxxxxxxxx to act as a hub on the Logmein web page by clicking on “Add/Remove members”.
Check the Hub box and press Save.

Edit Network

test_network

Members Join Requests Settings Password Subscription Delete

ID	Name	Type	Description
393-966-144	test_network	Hub-and-spoke	

Use the ID when joining this network from the Hamachi client.

View current members Add/Remove members

Name	Hub	Spoke	Client ID	Tag
<input checked="" type="checkbox"/> SERN-b827ebf1b575 [Guest]	<input checked="" type="checkbox"/>	<input type="checkbox"/>	227-779-324	

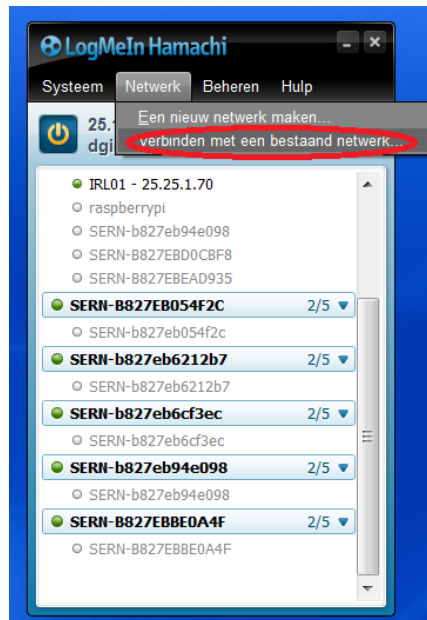
Save Cancel

You now need to add your personal computer to this network. Download the Logmein Hamachi software from www.vpn.net.

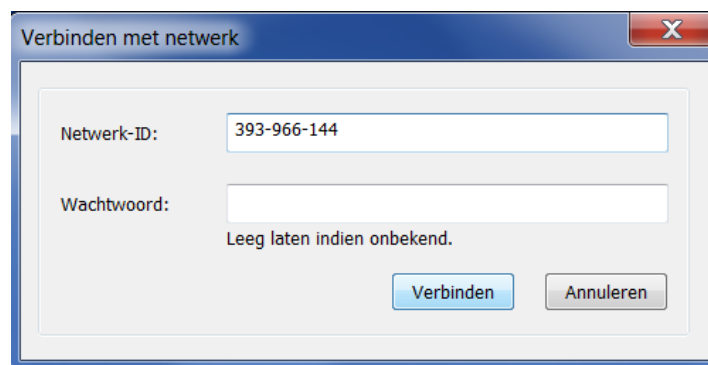


USER MANUAL

Open the software and click on the Network tab. Select “Join an existing network”.



Fill out the network ID and click Connect. Confirm that you want to ask for membership.



Accept your PC as a client in the Join Requests section on the Logmein page and click Save.

USER MANUAL

Edit Network

test_network ▾

Members Join Requests Settings Password Subscription Delete

Accept	Reject	Client Name	Client ID
<input checked="" type="radio"/>	<input type="radio"/>	dgielen-PC	200-199-847

Save Cancel

Now both your PC and the iQunet server should be in the list of network members. Make sure that the iQunet server is listed as a hub.

Edit Network

test_network ▾

Members Join Requests Settings Password Subscription Delete

ID	Name	Type	Description
393-966-144	test_network	Hub-and-spoke	

Use the ID when joining this network from the Hamachi client.

View current members | Add/Remove members

Name	Hub	Spoke	Client ID	Tag	Details
dgielen-PC [Guest]		•	200-199-847		Edit
SERN-b827ebf1b575 [Guest]	•		227-779-324		Edit

Save Cancel

You can find the IP address of this VPN network in the “Hamachi – VPN” control panel. You can now use this IP address instead of the IP address listed at “Ethernet – 802.3” to for example make a direct access connection or connect with UA Expert.

☰ Hamachi – VPN

🔧 VPN STATUS

Network type : P2P, VPN

Interface : ham0

Service : ☒

Status : logged in

IPv4 : 25.28.10.80

🔗 PEER NETWORKS

SERN-b827ebf1b575	[ACT] 393-717-464
test_network	[ACT] 393-966-144

USER MANUAL

Copy the IP address into <http://xxx.xxx.xxx.xxx:8000/dashboard/app> and open it in your browser. You will now get a direct link to the iQunet server.

The screenshot shows the iQunet Sensor Dashboard web interface. The browser address bar displays "Niet beveiligd | 25.28.10.80:8000/dashboard/app". The dashboard header includes the iQunet logo, navigation links (Login, iQunet.com, Products, Solutions, Contact), and a "Sensor Dashboard" title. A "Direct Link" button and "Last updated 17:28:37" timestamp are also present. The main content area is divided into two sections: "CONNECTED DEVICES" and "SENSOR STATUS".

CONNECTED DEVICES	
Base Station	82:e9:7b:90
Device	66:9b:43:13
Device	7b:9b:96:ad
Device	96:66:9c:10

SENSOR STATUS	
Network Interface	
Signal Strength : -111 dBm	[0/5]
MAC Address : 82:e9:7b:90	
PAN Address : 192.168.1.0	<button>Ping</button>

USER MANUAL

6. System clock (as from version 1.2.6)

In the “System Clock” section you can set up your own Network Time Protocol (NTP) server to synchronize the hardware clock with. Normally the default NTP server is used (0.debian.pool.ntp.org). The iQunet system takes into account the drift and offset between the Real Time Clock (RTC) and the NTP clock so in most cases this default NTP server will work fine.

If you need to use your own NTP server for example when the default NTP server is blocked by the firewall, you can change the Primary NTP server.

Open the “System Clock” panel by clicking the 3 stripes under the iQunet logo in the iQunet Sensor Dashboard. Edit the Primary NTP (to for example time.google.com) and press “Save”.

