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SODAQ IP69 Customer manual

SODAQ IP69 | SW v3.3.1

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Version history

Release	Date	Changes
R01	24-03-2022	Initial documentation for SW v3.2.1
R02	16-05-2022	Added SW changes v3.3.1
R03	21-07-2022	Export data from the dashboard via button

World-friendly IoT

Content

Description

The SODAQ IP69 is a tracker which can be used in almost all weather conditions. The tracker has a IP69K resistance rating, hence the name.

Device behaviour

The SODAQ IP69 is a tracker which generates position messages based on the current activity. The behavior can be modified on the dashboard for moving and/or static use.

LED Colors

In the dashboard the LED can be turned on and off. This is communicated with the device in a setting message.

The table below describes the color/behavior of the LED for different actions of the device.

Action	**Color**
Bootup	Red
No motion/static	Yellow (Blink in WDT / Minute Timer)
Movement Mode	Blue (Blink in WDT / Minute Timer)
Sending	Purple
Over-the-air update	White
Sleeping	Off

Please note: no motion and sleeping are two different things in this case. When the device is not in motion but awake the LED will be yellow. When the device is not in motion and asleep, the LED will be off. When in between two recording intervals, the device will be sleeping.

If debugging has been enabled the LED will remain faintly on as a reminder that the device is not fully powering down.

Dashboard | ThingsBoard

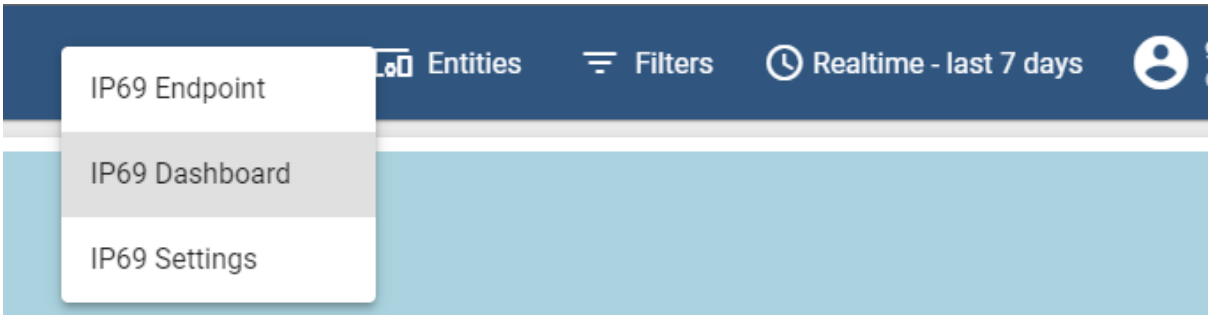
The dashboard is reachable on https://ip69-tb.sodaq.com/login

After login you will be on the main dashboard, the data dashboard.
On the overview page you can see where all your devices are and select one to see the details of this device.

Dashboards

Dashboard name	About
IP69 Dashboard	Main dashboard
IP69 Settings	Change settings per device
IP69 Endpoint	Set the endpoint for all devices.

In the top menu there is a dropdown to switch dashboards.

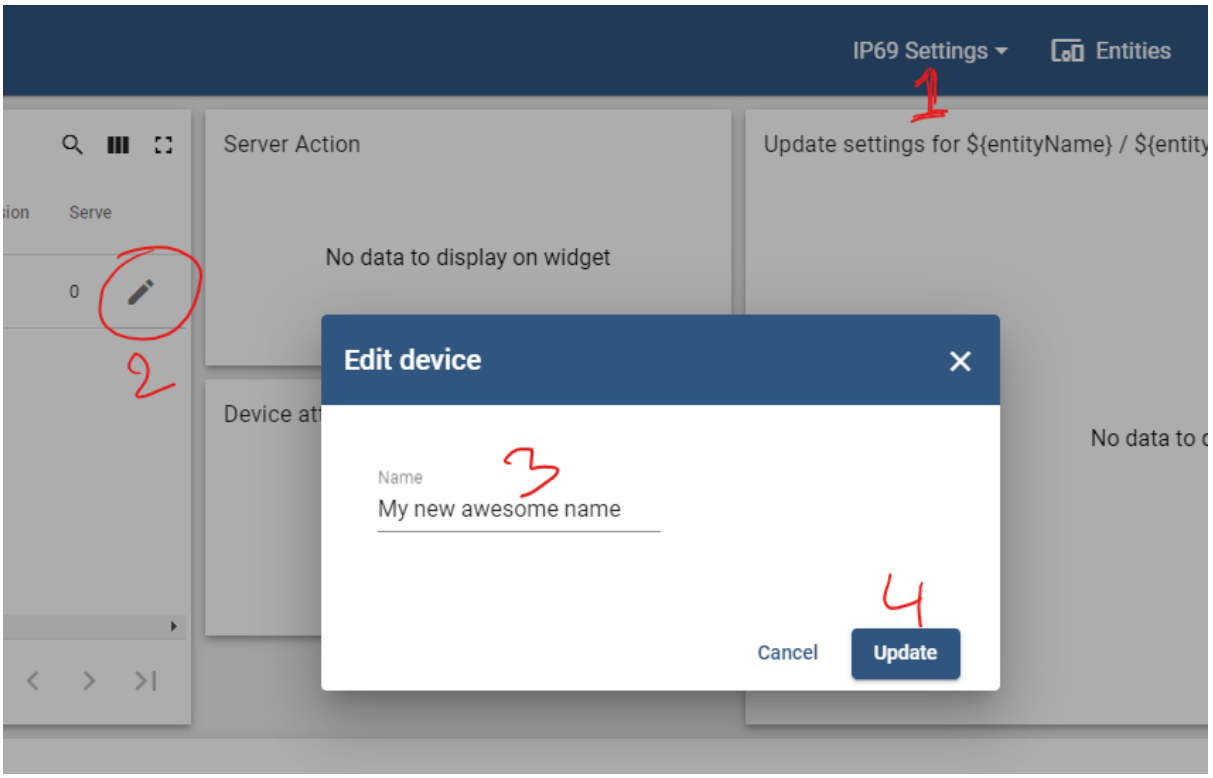


Settings Page - Update Name

There is a possibility to update the name of the device.
In all dashboards the device can be identified by the (chosen) name and IMEI.
Also the “name” field in the JSON which can be forwarded to your own endpoint will be filled with the (chosen) name.

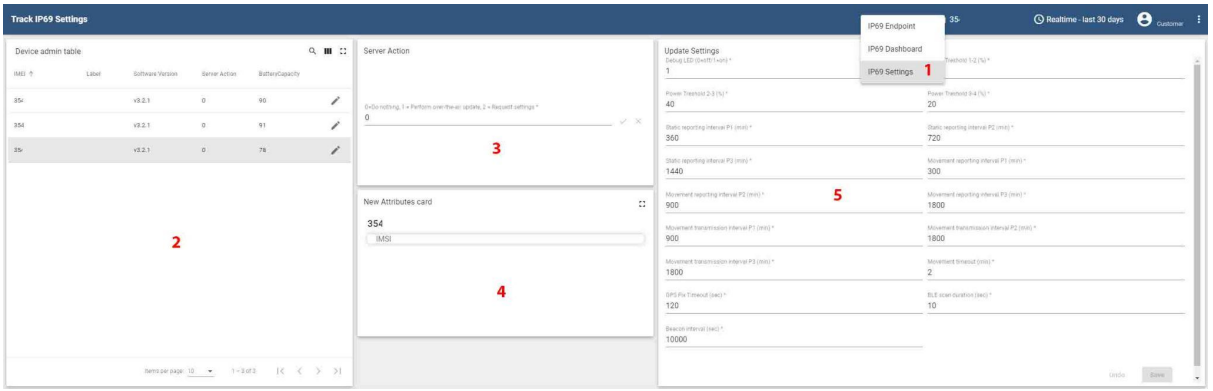
How to change the name:

1) Switch to the dashboard “IP69 Settings”
2) Press the edit marker in the list for the device you want to update the name for.
3) Update the name
4) Press “Update” to make the new name permanent.



Settings Page - Settings

1. Use the navigation dropdown to navigate to the settings page.
2. The device list, select your device to change the settings.
3. Server Action, here the over-the-air update and settings request can be set. This option will in the future disappear and be automated.
4. Device additional information.
5. Update Settings, here the settings can be modified.



Server Action

There are three options:
0 = Do nothing,
1 = Perform Over-The-Air update
2 = Request Settings.

This manual override option will in the future be removed and automated when settings are changed or a new version made available in the update system.

Do Nothing

Option 0 cannot be set.
The device should automatically go to 0 when it has confirmed the correct settings.

Perform Over-The-Air update

This option should only be enabled by SODAQ employees. Currently there is no communication between the update server and the data server.
When a customer sets the value to 1, the device will waste energy contacting the update server. The device will also not request for new settings.

When the device has successfully updated to a new version, a bootup message will be sent. The server will automatically change the “Server Action” to 2 to request and sync the settings.

Request Settings

The server will ask the device to send it’s latest settings and will reply with the intended settings. When the settings on the device and server are the same. The settings are in sync and the “Server Action” will automatically change back to 0 to do nothing next time and save energy.

Update Settings

Debug LED

Turn on or off the debug led. The debug LED can be used for indication of the device behaviour.

0 = off, 1 = on.

Power Threshold

The device has 4 power levels
In the first 3 power levels the device will operate.
In power level 4 device will charge till the battery level till the device can operate in PL3.

We recommend leaving the default values.

Default values for power levels:
Power Threshold 1-2 = 70
Power Threshold 2-3 = 40
Power Threshold 3-4 = 20

Static Reporting Intervals

Depending on the power levels the sample and transmit intervals can be modified.

Default values are:
P1 = 360
P2 = 720
P3 = 1440

Movement Reporting Intervals

Depending on the power levels the reporting intervals can be modified.
On the reporting intervals a new report of the current sensors is made and stored into memory. At these intervals the data is not sent.

Default values:
P1 = 900
P2 = 900
P3 = 1800

Movement Transmit Intervals

Depending on the power levels the transmit intervals can be modified.
At this moment the data reports will be transmitted to the server.

Default values:
P1 = 900
P2 = 1800
P3 = 1800

Movement Timeout

The timeout period for when a device has to go back into static mode.
The default value is 2. When a device is in movement mode and there has not been a movement indication for two minutes the device will go back into static mode.

GPS Fix Timeout

The maximum time the device should look for a GPS position.
Default value = 120.

BLE Settings

BLE is currently not used.
Default settings:
BLE scan duration = 10
Beacon interval = 10000

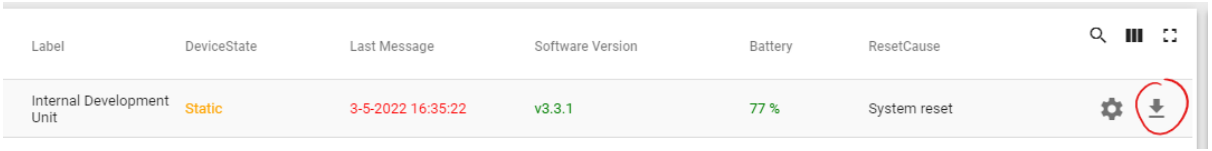
Accelerometer

Enable or disable the motion detection.
0 = off.
1 = on.
Default = 1

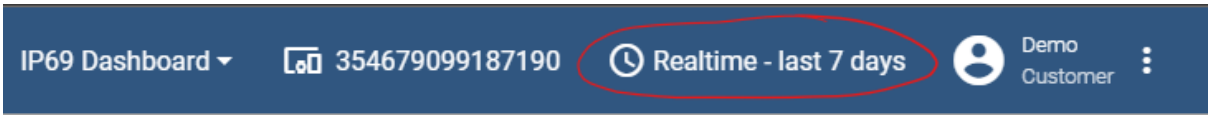
Export data from the dashboard

From the dashboard there is a possibility to download the data per device for a certain time period.

1. Press the Download button.



2. Select the timewindow



3. Press Export to obtain the CSV

Data forwarding

Payload description

What	Datatype	Extra Info
messageType	Integer	0: Data 1: Settings 2: Acknowledgement settings Only message type 0 will be forwarded
messageRevision	Integer	12: The current message type
imei	Integer	The imei of the modem
serialNumber	String	The imei as String
key	Integer	Not used, value can be ignored
cRAT	Integer	Radio Access Technology 7: LTE-M 8: NB-IoT 9: GPRS (2G)
cID	Integer	Cell ID
cLAC	Integer	Cell LAC/TAC
cMNC	Integer	Mobile Network Code
cMCC	Integer	Mobile Country Code
cRSSI	Integer	Received Signal Strength Indicator
messageReason	String	Available options: - Startup - State Change - Periodic
messageCounter	Integer	
deviceState	String	Available options: - Static - Movement - Working
resetCause	String	Available options: - Power On - Brown out 12 Detector

		- Brown out 33 Detector - External - Watchdog - System reset
System reset	Integer	unix epoch timestamp in milliseconds
powerLevel	Integer	PL 1,2 and 3 can be set in the settings. When the device is in PL4 it will not do anything till the device is charged to continue as PL3.
batteryCapacity	Integer	Battery value in percentage
superCapCapacity	Integer	Supercap value in percentage
solarVoltage	Float	Measured solar panel voltage
boardTemperature	Integer	The measured temperature inside in Celsius
superCapOnly	Integer	Value will be set to one when the battery cannot be used. This will happen when temperatures will be too high/low.
latitude	Float	decimal degrees
longitude	Float	decimal degrees
altitude	Integer	meters above sea level
speed	Integer	KM per hour
course	Integer	The direction in degrees
satellitesObserved	Integer	Amount of Satellites used to obtain a fix
timeToFix	Integer	The amount of seconds used to get a fix. 65534: No fix attempted 65535: Timeout, failed to get a fix
bleCount	Integer	The amount of BLE devices found. Scan is only performed when the device state changes to idle. 255: BLE Scan skipped
mac1	String	MAC address from BLE device 1

rssi1	Integer	RSSI value from BLE device 1
mac2	String	MAC address from BLE device 2
rssi2	Integer	RSSI value from BLE device 2
mac3	String	MAC address from BLE device 3
rssi3	Integer	RSSI value from BLE device 3
crc	Integer	CRC value from the send payload.
name	String	Custom name set in the dashboard

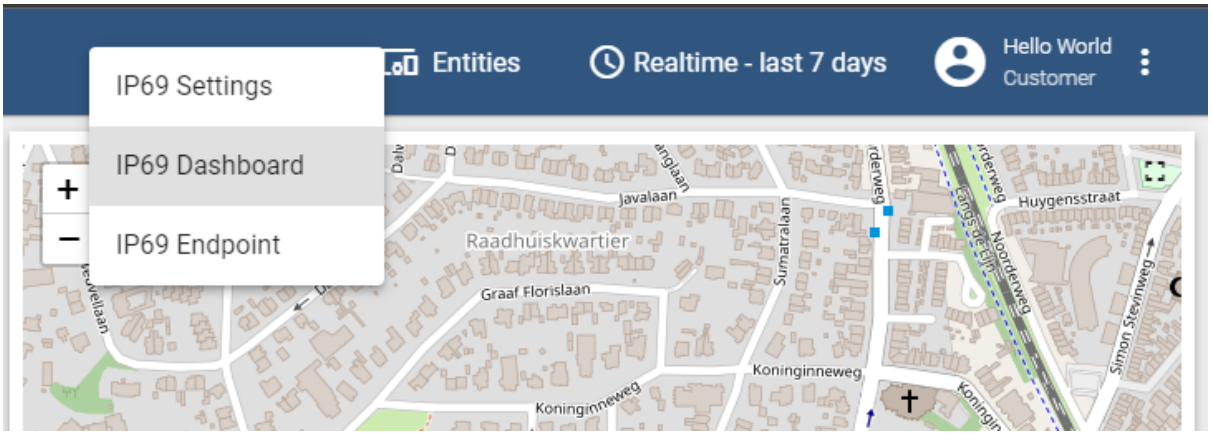
* Incorrect values are forwarded as empty values.

Example payload


```
{
  "messageType": 0,
  "messageRevision": 13,
  "imei": 35467000000000,
  "serialNumber": "35467000000000",
  "key": 858927665,
  "cRAT": 7,
  "cID": 32773,
  "cLAC": 1211,
  "cMNC": 4,
  "cMCC": 204,
  "cRSSI": -51,
  "messageReason": "Periodic",
  "messageCounter": 3209,
  "deviceState": "Static",
  "resetCause": "Power On",
  "timestamp": 1652705231000,
  "powerLevel": 1,
  "batteryCapacity": 99,
  "superCapCapacity": 91,
  "solarVoltage": 6.5,
  "boardTemperature": 42,
  "superCapOnly": 0,
  "latitude": 51.9,
  "longitude": 5.2,
  "altitude": -23,
  "speed": 0,
  "course": 0,
  "satellitesObserved": 7,
  "timeToFix": 2,
  "bleCount": 0,
  "mac1": "",
  "rssi1": "",
  "mac2":"",
  "rssi2": "",
  "mac3": "",
  "rssi3": "",
  "crc": 41143,
  "name": "My Awesome Name"
}
```

How to set your endpoint

- Login to your account on https://ip69-tb.sodaq.com
- Switch to the “IP69 Endpoint” dashboard.



- On the IP69 Endpoint dashboard
  - Select any device from the list.
  - Fill in your endpoint
  - Press “Enter” or select the checkmark to save the new endpoint to all your devices.