

# Smappee MQTT Documentation

This document describes how to use the MQTT functionality of the Smappee Monitor. All Smappee monitors sent out MQTT Topics which can be picked up by an external MQTT Broker.

Note: The Smappee Plus and Pro have additionally a local MQTT Broker and Node-RED engine incorporated. This is not discussed in this document.

## MQTT Technology

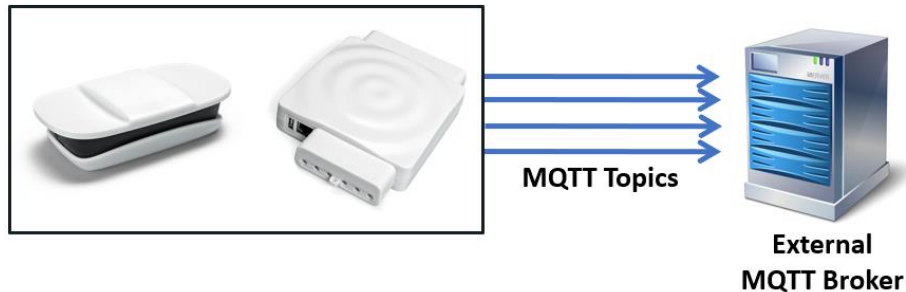
MQTT is a machine-to-machine (M2M)/"Internet of Things" connectivity protocol. It was designed as an extremely lightweight publish/subscribe messaging transport. It is useful for connections with remote locations where a small code footprint is required and/or network bandwidth is at a premium.

Official website of MQTT: <http://mqtt.org/>

## General overview

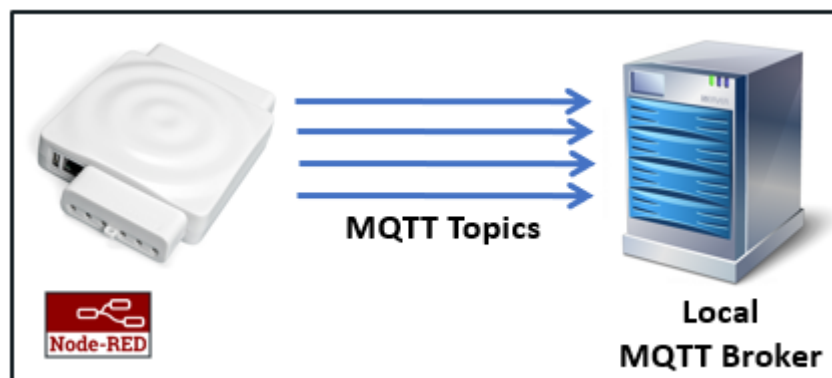
### Applicable for all Smappee Energymonitors

- The Smappee devices pushes MQTT-data (topics) constantly
- The server which is equipped with an MQTT broker, is 'subscribed' to a set of the Smappee data and redirects the data to a specified location



### For Smappee Plus and Pro only

The Smappee Plus and Pro have **additional** functionality a local MQTT Broker and Node-RED engine incorporated.



## Smappee MQTT Topics Overview

- uuid: The unique identifier of the service location
- node id: The unique identifier of the plug

Topic	Message content
servicelocation/<uuid>/configuraton	Contains the meta data of the service location. (eg. Serial number, Owner, Language, NILM version, ...)
servicelocation/<uuid>/aggregated5min	Contains the consumption values aggregated per 5 minutes.
servicelocation/<uuid>/realtime	Contains real-time data of all active, reactive voltage, current and power measurements as well as energy values in Wh and Varh. Published every second.
servicelocation/<uuid>/plug/<node id>/state	Contains an indicator that the specified plug at the smappee device that is activated on the specified service location, is switched on or off and the timestamp on which the switch to that state occurred.
servicelocation/<uuid>/plug/<node id>/setstate	Sets the state 'On' or 'Off' on the specified plug at the smappee device that is activated on the specified service location.

### **TIP: How to obtain the UUID?**

The Service location UUID can be obtained in two ways:

1. Onetime REST API call:  
<https://smappee.atlassian.net/wiki/spaces/DEVAPI/pages/8552475/Get+Servicelocations>
2. Wildcard as UUID: use a MQTT wildcard as UUID and based on the Configuration Topic results, match it tp the serial number you need  
<https://www.hivemq.com/blog/mqtt-essentials-part-5-mqtt-topics-best-practices>.

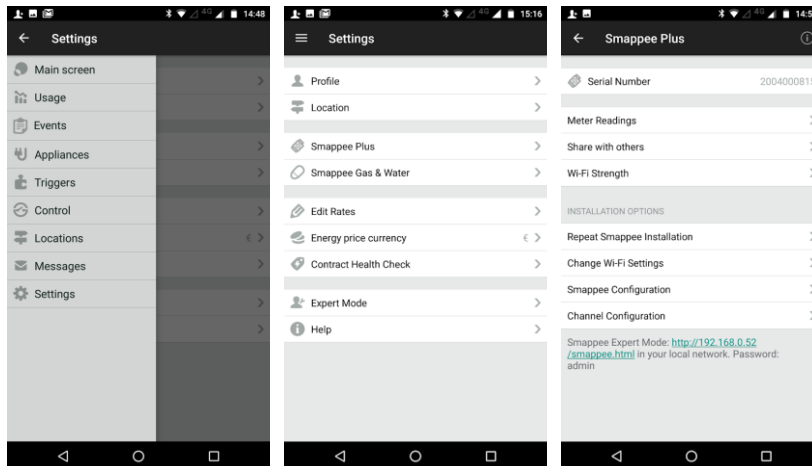
## Setup Smappee Device

The internal MQTT-Broker location is setup on the Smappee Device Monitor using the Expert portal, using the following steps:

### 1. Log in to the Expert Portal of Smappee Monitor

Note: The tablet or laptop needs to be connected to the same network as the Smappee monitor to be able to use the Expert Portal.

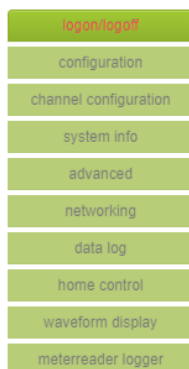
#### a) Go to Smappee Plus using 'Settings' – select Smappee Plus





#### b) Fill in the URL mentioned in Smappee Expert Mode in your web browser:


Smappee Expert Mode: <http://192.168.0.52/smappee.html> in your local network. Password: admin

#### c) Click on and fill in password (see password in previous screenshot) and click



Logon


  



- d) Click on 
- e) Fill in the location of the external MQTT Broker with either a IP-address or domain.

**Smappee Energy & Solar Monitor:**


- Activate 'Advanced' checkbox:

Advanced config parameters	Setting	
Webportal password	<input type="text" value="admin"/>	
Active power lower limit (color green->yellow)	<input type="text" value="0"/>	W (0=off)
Active power upper limit (color yellow->orange)	<input type="text" value="0"/>	W (0=off)



Advanced action	
Restart monitor	
Reset active power peak values	
Enable/disable green breathing	<input checked="" type="checkbox"/>
Enable/disable command control look ahead schedule recover	<input checked="" type="checkbox"/>
Advanced	<input type="checkbox"/>

Advanced config parameters	Setting	
Webportal password	<input type="text" value="admin"/>	
Active power lower limit (color green->yellow)	<input type="text" value="0"/>	W (0=off)
Active power upper limit (color yellow->orange)	<input type="text" value="0"/>	W (0=off)
MDNS hostname	<input type="text" value="Smappee1007002620"/>	
MQTT local broker (e.g. tcp://192.168.0.48:1883)	<input type="text" value="tcp://192.168.x.x:1654"/>	
Switch 5 minute read delay	<input type="text" value="0"/>	nr of seconds delay



- To save the settings, click  .

## Smappee Plus and Pro monitor:

### Monitor configuration

Advanced config parameters	Setting	
Webportal password	<input type="text" value="admin"/>	
Active power lower limit (color green->yellow)	<input type="text" value="0"/>	W (0=off)
Active power upper limit (color yellow->orange)	<input type="text" value="0"/>	W (0=off)
Meter reader logging	<input type="text" value="0"/>	nr of 5 second entries (0=disabled) (1h/file)
MQTT local broker (e.g. tcp://192.168.0.48:1883)	<input type="text" value="tcp://192.168.x.x:1684"/>	
<input type="button" value="Apply changes and restart monitor"/>		

- To save the settings, click  .

## MQTT Topics Details

Topic name	Parameters	Description	Retained	Example content
servicelocation/ <uuid>/config	uuid: The unique identifier of the service location	Contains the meta information of the service location as key/value pairs	true	<pre>{   "utcTimeStamp":151635178 1376,   "deviceUuid":"c82b8446- 3457-407a-82f4- 9e1d78e94e34",   "serialNumber":"2004000025 ",   "serviceLocationUuid":"a02e 00de-b589-11e7-bebe- 0221c2cd44f5",   "serviceLocationId":555,    "firmwareVersion":"V3125",    "aggregationPeriodSeconds": 300,  }</pre>
servicelocation/ <uuid>/sensorC onfig	uuid: The unique identifier of the service location		true	<pre>{   "utcTimeStamp":151635515 3244,   "gwSensors":[     {       "gwSensorChannelsConfi g":[         {           "leakIntervals":2,           "maxPulses":150,           "ppu":1.0,           "uom":"l",           "enabled":true,           "type":"WATER"         },         {           "leakIntervals":0,           "maxPulses":5,           "ppu":1.0,           "uom":"m3",           "enabled":false,           "type":"GAS"         }       ],       "sensorId":175,       "serialNumber":"3004001</pre>

				<pre> 483"   } ], "switchSensors":[   {     "name":"Nieuwe plug 1",     "serialNumber":"4004000 101",     "sensorId":173   },   {     "name":"TestAndre",     "serialNumber":"4006999 999",     "sensorId":174   } ] } </pre>
<p>servicelocation/ &lt;uuid&gt;/channel Config</p>	<p>uuid: The unique identifier of the service location</p>		<p>true</p>	<pre> {   "utcTimeStamp":1516351942 839,   "inputChannels":[     {       "ctInput":0,       "name":"load1",       "phase":0,       "inputChannelType":"CO NSUMPTION",       "inputChannelConnection ":"GRID",       "reversed":false,       "nilm":false,       "balanced":false,       "inputChannelCTType":"C T50_100_200"     },     {       "ctInput":1,       "name":"load2",       "phase":0,       "inputChannelType":"CO NSUMPTION",       "inputChannelConnection ":"SUBMETER",       "reversed":true,       "nilm":false,       "balanced":false, </pre>

				<pre>       "inputChannelCTType": "C T50_100_200"     },     {       "ctInput": 2,       "name": "load3",       "phase": 0,       "inputChannelType": "UN USED",       "inputChannelConnection ": "OFF_GRID",       "reversed": false,       "nilm": false,       "balanced": false,       "inputChannelCTType": "C T50_100_200"     },     {       "ctInput": 3,       "name": "solar1",       "phase": 0,       "inputChannelType": "UN USED",       "inputChannelConnection ": "OFF_GRID",       "reversed": false,       "nilm": false,       "balanced": false,       "inputChannelCTType": "C T50_100_200"     },     {       "ctInput": 4,       "name": "solar2",       "phase": 0,       "inputChannelType": "UN USED",       "inputChannelConnection ": "OFF_GRID",       "reversed": true,       "nilm": false,       "balanced": false,       "inputChannelCTType": "C T50_100_200"     },     {       "ctInput": 5, </pre>
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				<pre> "name":"solar3", "phase":0, "inputChannelType":"UN USED", "inputChannelConnection ":"OFF_GRID", "reversed":true, "nilm":false, "balanced":false, "inputChannelCTType":"C T50_100_200" }, { "ctInput":6, "name":"test3", "phase":0, "inputChannelType":"UN USED", "inputChannelConnection ":"GRID", "reversed":false, "nilm":false, "balanced":false, "inputChannelCTType":"C T50_100_200" }, { "ctInput":7, "name":""," "phase":0, "inputChannelType":"UN USED", "inputChannelConnection ":"GRID", "reversed":false, "nilm":false, "balanced":false, "inputChannelCTType":"C T50_100_200" }, { "ctInput":8, "name":""," "phase":0, "inputChannelType":"UN USED", "inputChannelConnection </pre>
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				<pre> ": "GRID",   "reversed": false,   "nilm": false,   "balanced": false,   "inputChannelCTType": "CT50_100_200" } ] } </pre>
<p>servicelocation/ &lt;uuid&gt;/homeControlConfig</p>	<p>uuid: The unique identifier of the service location</p>		<p>true</p>	<pre> {   "utcTimeStamp": 1516351781394,   "switchActuators": [     {       "nodeId": 42,       "name": "Nieuwe plug 1",       "serialNumber": "4004000101"     },     {       "nodeId": 43,       "name": "TestAndre",       "serialNumber": "4006999999"     }   ],   "smartplugActuators": [     {       "nodeId": 50,       "name": "Nieuwe plug 3"     }   ] } </pre>
<p>servicelocation/ &lt;uuid&gt;/presence</p>	<p>uuid: The unique identifier of the service location</p>	<p>Contains a flag that indicates if the smappee device that is activated on the service location detected presence based on</p>	<p>true</p>	<pre> {   "value": true } </pre>

		the actual consumption.		
servicelocation/ <uuid>/realtime	uuid: The unique identifier of the service location	<p>Contains the realtime power values. Note that this information is published every second.</p> <p>Where:</p> <ul style="list-style-type: none"> <li>power in W (watt)</li> <li>energy in J (joule, Ws) (not persisted, reset to 0 on every software restart)</li> <li>voltage in V</li> </ul>	false	<pre>{   "totalPower":98,   "totalReactivePower":116,   "totalExportEnergy":0,   "totalImportEnergy":344037,   "monitorStatus":0,   "utcTimeStamp":1516355206580,   "channelPowers":[     {       "ctInput":0,       "power":98,       "exportEnergy":0,       "importEnergy":344037,       "phaseId":0,       "current":7     },     {       "ctInput":1,       "power":99,       "exportEnergy":0,       "importEnergy":346027,       "phaseId":0,       "current":7     }   ],   "voltages":[     {       "voltage":207,       "phaseId":0     },     {       "voltage":0,       "phaseId":1     },     {       "voltage":0,       "phaseId":2     }   ] }</pre>

		<p>(volt)</p> <ul style="list-style-type: none"> <li>• current in dA (deciamperè)</li> <li>• totals are the aggregated values taken into account the channel configuration</li> </ul>		
<p>servicelocation/ &lt;uuid&gt;/aggregated</p>	<p>uuid: The unique identifier of the service location</p>	<p>Contains the consumption values aggregated per 5 minutes.</p> <p>Note that this information is published</p>	<p>false</p>	<pre>{   "intervalDatas": [     {       "utcEndtime": 1516632600000,       "averageRMSVoltages": [         2231,         0,         0       ],       "alwaysOn": 78702     }   ],   "channelIntervalDatas": [     {</pre>

		every 5 minutes.		<pre>                 "averageRM SCurrent":673,                 "averageIm portRMSActivePower":10051 3,                 "averageEx portRMSActivePower":0,                 "averageRM SApparentPower":150597,                 "averageRM SReactivePower":111867,                 "averagePo werfactor":65,                 "ctInput": 0             },             {                 "averageRM SCurrent":675,                 "averageIm portRMSActivePower":10108 9,                 "averageEx portRMSActivePower":0,                 "averageRM SApparentPower":150962,                 "averageRM SReactivePower":111832,                 "averagePo werfactor":65,                 "ctInput": 1             },             {                 "averageRM SCurrent":0,                 "averageIm portRMSActivePower":0,                 "averageEx portRMSActivePower":0,                 "averageRM SApparentPower":0,                 "averageRM SReactivePower":0,                 "averagePo werfactor":0,                 "ctInput": 2             },             {                 "averageRM SCurrent":0,                 "averageIm portRMSActivePower":0,                 "averageEx portRMSActivePower":0,                 "averageRM SApparentPower":0,                 "averageRM SReactivePower":0,                 "averagePo </pre>
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				<pre> werfactor":0,   "ctInput":   3     },     {       "averageRM SCurrent":0,       "averageIm portRMSActivePower":0,       "averageEx portRMSActivePower":0,       "averageRM SApparentPower":0,       "averageRM SReactivePower":0,       "averagePo werfactor":0,       "ctInput":   4     },     {       "averageRM SCurrent":0,       "averageIm portRMSActivePower":0,       "averageEx portRMSActivePower":0,       "averageRM SApparentPower":0,       "averageRM SReactivePower":0,       "averagePo werfactor":0,       "ctInput":   5     },     {       "averageRM SCurrent":0,       "averageIm portRMSActivePower":0,       "averageEx portRMSActivePower":0,       "averageRM SApparentPower":0,       "averageRM SReactivePower":0,       "averagePo werfactor":0,       "ctInput":   6     },     {       "averageRM SCurrent":0,       "averageIm portRMSActivePower":0,       "averageEx portRMSActivePower":0,       "averageRM SApparentPower":0, </pre>
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				<pre>                 "averageRMSReactivePower":0,                 "averagePowerfactor":0,                 "ctInput":7             },             {                 "averageRMSCurrent":0,                 "averageImportRMSActivePower":0,                 "averageExportRMSActivePower":0,                 "averageRMSApparentPower":0,                 "averageRMSReactivePower":0,                 "averagePowerfactor":0,                 "ctInput":8             }         ],         "version":2     } ] } </pre>
<p>servicelocation/ &lt;uuid&gt;/aggregatedGW</p>		<p>Contains the consumption values aggregated per 5 minutes.</p> <p>Note that this information is published on the 5 minutes boundary only if there was consumption during that 5 minute period.</p>		<pre> {   "gwIntervalDatas":[     {       "utcEndtime":151663290000,       "sensorId":175,       "index0Delta":2,       "index1Delta":0,       "temperature":246,       "humidity":45,       "battLevel":67,       "version":1     }   ] } </pre>

<p>servicelocation/ &lt;uuid&gt;/aggregatedSwitch</p>		<p>Contains the consumption values aggregated per 5 minutes.</p> <p>Note that this information is published every 5 minutes.</p>		<pre>{   "switchIntervalDatas":[     {       "utcEndtime":151663260000,       "activePower":0,       "reactivePower":0,       "version":1,       "sensorId":173     }   ] }</pre>
<p>servicelocation/&lt;uuid&gt;/plug/&lt;node id&gt;/state</p>	<p>uuid: The unique identifier of the service location</p> <p>node id: The unique identifier of the plug</p>	<p>Contains an indicator that the specified plug at the smappee device that is activated on the specified service location, is switched on or off and the timestamp on which the switch to that state occurred.</p> <p>The timestamp is the number of milliseconds that have passed since Jan 1st, 1970 (UTC).</p>	<p>true</p>	<pre>{   "value": "ON",   "since": 1505479692000 } {   "value": "OFF",   "since": 1505479692000 }</pre>



<p>servicelocation/&lt;<b>uuid</b>&gt;/plug/&lt;<b>node id</b>&gt;/connectionState</p>	<p>uuid: The unique identifier of the service location</p> <p>node id: The unique identifier of the plug</p>	<p>Contains an indicator that the specified plug at the smappee device that is linked to the service location, is connected (1), disconnected (0), or unreachable (2) and the timestamp on which the switch to that state occurred.</p> <p>The timestamp is the number of milliseconds that have passed since Jan 1st, 1970 (UTC).</p>	<p>true</p>	<pre>{   "value":"CONNECTED",   "since":1516355163247 } {   "value":"DISCONNECTED",   "since":1516355163247 } {   "value":"UNREACHABLE",   "since":1516355163247 }</pre>
<p>servicelocation/&lt;<b>uuid</b>&gt;/plug/&lt;<b>node id</b>&gt;/setstate</p>	<p>uuid: The unique identifier of the service location</p> <p>node id: The unique identifier of the plug</p>	<p>Sets the state 'On' or 'Off' on the specified plug at the smappee device that is activated on the specified service location.</p>	<p>true</p>	<pre>{   "value": "ON",   "since": 1505479692000 } {   "value": "OFF",   "since": 1505479692000 }</pre>