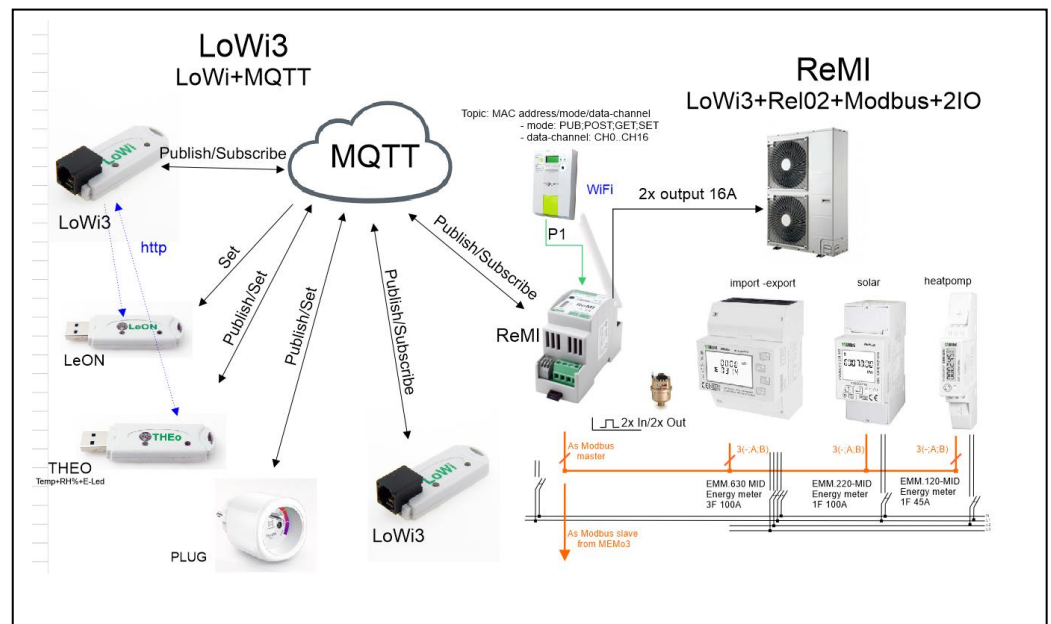


LOWI3, REMI, MEMO3 MQTT V1.3

MQTT om 2-WIRE loggers met mekaar te koppelen.



objective

In this short guide for the APP or CLOUD developer, we explain how to set the http and especially MQTT option in both the LoWi, LeON, PLUG, ReMI and MEMo3 module, discuss the different instructions and explain how the pay loads are structured. Note: LoWi3 and ReMI are both web servers just like MEMo3. With MEMo3 the configuration is the same but in a slightly different layout.

1. LOWI3 CONFIGURATION
2. HTTP CONNECTIONS
3. MQTT CONNECTIONS
4. Attachments
5. TOPICS for OEM applications

1. LOWiv3 (ReMI) CONFIGURATION:

Click on 'LOWI' at the top and you will enter the setup

NETWORK – PASS – IP – PORT : is set via **CONFIG PORTAL** (see separate chapter)

LoWi Login – PASS:

default: login: LOWI and password: 20.1.1.1

This is your login and password to access when you are outside the house. But for this, a 'port-forwarding' must be done in your router ! Within the local network you can easily adjust login-password.

HTTP Domain – DIR – HTTP Login – PASS: You can send all logs to an HTTP server for backup. The time is determined with **UPLOAD INTERVAL** (from 1 minute to 24h)

With '**TEST**' one can directly test the settings with the chosen HTTP server. See separate chapter for this application.

MQTT ENABLE: when activated, data can now be sent or received via an 'MQTT BROKER'
See separate chapter

LANGUAGE: choice of NL-FR-EN-DU

NTP– The internal clock is synchronized every hour with a remote 'NTP server'. If it turns green, there is a connection to the Internet.

TIME ZONE: This will be set according to your location.

UPGRADING: Sometimes there are improvements or 'bugs'. By selecting 'START', the LOWI will check if there

are any updates and possibly run them (time approx. 1 minute)

STYLE B/W: NEW!! the layout has 2 styles and can be adjusted according to your taste.

SAVE: All changes are saved after confirmation with 'adminLOWI'

EXIT: back to the main screen (DASHBOARD)

COST: here you can enter (approximate) cost prices of your energy (electricity, gas, water)

WARNING IMPORT MAX: If you have a 'LEON' or 'THEO' installed, it can give a 'flash warning' when your total consumption of the P1 meter exceeds this limit.

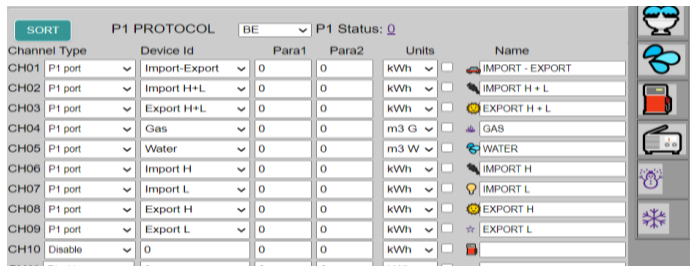
Flashing stops when consumption decreases below 10% of this setting. (see more explanation for the module 'LEON' or 'THEO')

WARNING EXPORT MIN: If you have a 'LEON' or 'THEO' installed, it can give a 'green flash warning' when exporting energy (solar panels) above this limit. The flashing stops when the export is zero.

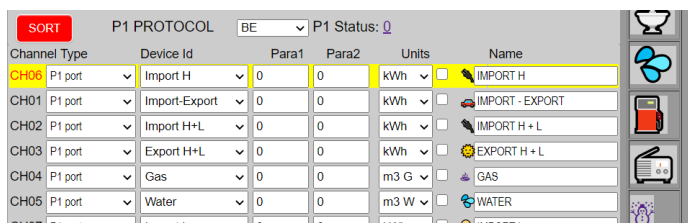
P1 PROTOCOL: this will be set according to your digital meter (Belgium = BE, NL 2.0-4.0-5.0)

CHANNELS: up to 16 log channels to use.

Upon delivery, the first 9 channels are set to the P1 port with protocol 'BE'

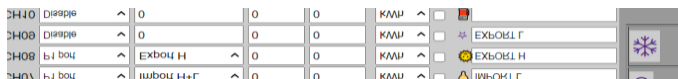


Click on **'SORT'** to change the order if necessary: Left click on the desired channel, hold click, and move to the desired position. This operation can be repeated until all channels are in the desired order.



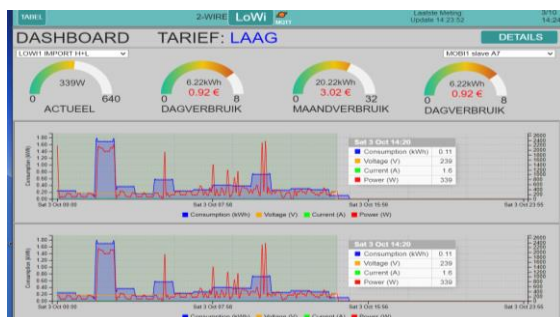
Then click **'SORT'** back and save to maintain this setting.

If you do not want to use all channels (e.g. only IMPORT H+L and GAS) you can switch off the desired channels by selecting **'Disable'**.



IMPORTANT! At **'Name'** a name must be entered (minus 3 characters, max 16 characters), otherwise this channel will NOT be shown or logged!

After **'SAVE'** and **'EXIT'**, it may take a few seconds for the custom **DASHBOARD** to become visible.



Press **'DETAILS'** to view all selected channels. Clicking back on **'LOWI'** is the **'DASHBOARD'**.



Thus, the P1 port configuration does not require any special knowledge to configure it.

By default, all 9 channels of the P1 port are active.

At the first commissioning, all consumptions (daily-month-annual consumption) would be zero.

If this is not the case, the following procedure can be applied:

CLEAR LOGS: Go to the configuration and name the channel to be deleted.



Press **'SAVE'**+ login (adminLOWI) All logs of this channel will now be completely deleted. (about 4-5 seconds erasure time).

Afterwards, the original name will be automatically filled in again and the consumption of this channel will be set to ZERO. (NOT THE METER READINGS!)

If several channels need to be cleared, it is best to do this procedure one by one, in order to avoid too long a procedure time. This could lead to a 'timeout' for the web server and possibly even 'crash'. If this is the case (web page is no longer visible after 're-load'), disconnect the LOWI and mount it back. (hard reset)

So much for the P1 port. However, the LOWI can log more than just the P1 port!

2. HTTP CONNECTIONS

2.1. LEON-THEO koppelen met LOWI of ReMI via HTTP:

The status of the P1 port can also be visually displayed with an RGB LED via the 'LeON' or THEO' module.

In the REDIRECT page

The LeON or THEO receives the same IP address and portnumber of the **LOWI** module in the WiFi configuration of this module.

NOTE Mac address for latere configuration !!!

THEO Mac f4cfa25a113f

telenet-DCA6F(R) 100%
 TelenetWiFiFree 56%
 telenet-DCA6F 52%
 DIRECT-4HM2020_Series 48%

SSID: telenet-DCA6F
 Password: ABCDEF0123456789ABCDEF0123

HTTP - MQTT **HTTP**

IP addr LoWi: 192 168 0 88 Port: 8090 CH 1-16: 15
 SUBNET: 255 255 255 0
 GATEWAY: 192 168 0 1

save

In case theO module (temperature measurement), the selector '**HTTP-MQTT**' must be set to '**HTTP**', and a channel no **CH(1-16)** must be entered. **E.g. 15**

(see later) Press save.

THEO f4cfa25a113f Configuration Saved

Connect LoWi to SSID: telenet-DCA6F
 IPaddress: 192.168.0.88:8090

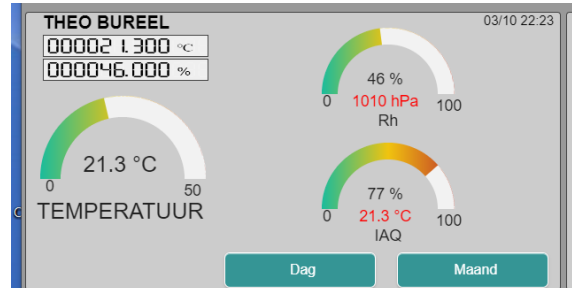
In the LoWi3 setup page

With the linked LOWI, with the same IP address as entered in the WiFi configuration of the THEO, a channel must now be created with the selection '**THEO**'. Under '**Para1**', the chosen channel no is filled in (e.g. **15**), AND the 'Units' must be set to '**IAQ**'. Don't forget to give a name to this channel! (blank name = not active !)

If there are several THEOs, **then each THEO** must get a unique channel nr (1-16) !!

CH10	THEO	0	15	0	IAQ	<input type="checkbox"/>	THEO.CH15
CH11	Disable	0	0	0	kWh	<input type="checkbox"/>	

One can now log the temperature, humidity and (indicative) the air quality.



3. MQTT CONNECTIONS:

The addition of '**MQTT**' is a major change from the LOWIv1

Now one can exchange all data between multiple LOWIs, THEOs, ReMI's, MEMo3's, PLUG's via an 'intermediate station'.

This intermediate station is called the '**BROKER**'. The user must first create an **account** with a broker of his choice, or a broker of 2-WIRE (subject to small rent).

What are the advantages compared to HTTP:

Each module, which has the **same account**, can communicate with each other, anywhere in the world.

(of course all modules must have access to the Internet)

Port forwarding should not be done in your router because MQTT works in real-time and bi-directional in data traffic. (With HTTP, the LOWI cannot reach directly the THEO or LeON and must wait for the THEO or LeON to send data to the LOWI. This also only works on the local Wi-Fi network and we have noticed that some Wi-Fi routers block this http communication.)

Data storage can also be done in the broker, as a backup of your data.

The biggest advantage of MQTT is that one can exchange data between modules in all possible places.

3.1. WiFi Portal THEO - PLUG- LeON:

Select "**MQTT**" in the WiFi portal now

- Enter your **Broker's** address.

THEO Mac f4cfa25a113f

telenet-DCA6F(R) 100%
 TelenetWiFiFree 56%
 telenet-DCA6F 52%
 DIRECT-4HM2020-Series 48%

SSID: telenet-DCA6F
 Password: ABCDEF0123456789ABCDEF0123

HTTP - MQTT **MQTT**

MQTT Broker: broker.be
 MQTT Token: testtesttest.....
 MQTT Pass:
 save

- Fill in the obtained "**Token**". (= login)
- Possibly also **Password**.

Note. Both PROTOCOLS **HTTP** and **MQTT** can also be applied simultaneously in THEO and ReMI !

Then select "**BOTH**" and enter both the IP address and port no of the LOWI and the data for the Broker.

THEO Mac f4cfa25a113f

telenet-DCA6F(R) 100%
 TelenetWiFiFree 56%
 telenet-DCA6F 52%
 DIRECT-4HM2020-Series 48%

SSID: telenet-DCA6F
 Password: ABCDEF0123456789ABCDEF0123

HTTP - MQTT **BOTH**

IP addr LoWi: 192 168 0 88 Port: 8090 CH 1-16 15
 SUBNET: 255 255 255 0
 GATEWAY: 192 168 0 1

MQTT Broker: broker.be
 MQTT Token: testtesttest.....
 MQTT Pass:
 save

One could now use HTTP when all modules are locally on the same WiFi network, but at the same time send a "backup" of the data to the Broker.

(this setting may not be interesting in most cases and '**MQTT**' would be preferred)

Remember that INTERNET must always be present on your Wi-Fi network !

Don't forget save.

THEO f4cfa25a113f Configuration Saved

Connect LoWi to SSID: telenet-DCA6F
 IPaddress: 192.168.0.88:8090

3.2. MQTT ENABLE in LOWI:

The LOWI must also receive the same address of the Broker and Token (= login) such as the THEO, LeON or PLUG.

Now check '**MQTT ENABLE**' in the LOWI configuration.

You can now enter the address, token and password of your broker.

As already mentioned, MQTT can receive data from the THEO, PLUG, ReMI, MEMo3 or LOWI3 at any location.

LoWi sends P1 port data to the MQTT broker every minute and you can read it via your own application. However, if you want to see an update of this data faster, you can check '**P1 FAST PUBLISH**'. Now all data from the P1 port will be sent to the broker (= PUBLISH) every 10 seconds

In addition, there is a check mark with '**BU CONFIG**'. Once your configuration is ready, you can send this configuration to the broker as a backup. Then check 'BU CONFIG' and press '**SAVE**'.

Afterwards, if desired, you can go back to the last saved configuration in case of a fatal 'crash' or if the new configuration was not good.

NOTE: The logs are NOT adjusted when you call up the previous configuration.

So if changes are made to the type of channels, then possibly wrong data can be displayed (e.g. CH01 was temperature IAQ, and has since been changed to kWh... This is trouble!

This function can only work if you were already connected to the broker.

When you fill in the broker's details for the first time, the connection will be made about 10 seconds AFTER you have pressed 'SAVE'. This can be recognized by the symbol next to 2-WIRE LOWI:

No connection



Connection in order

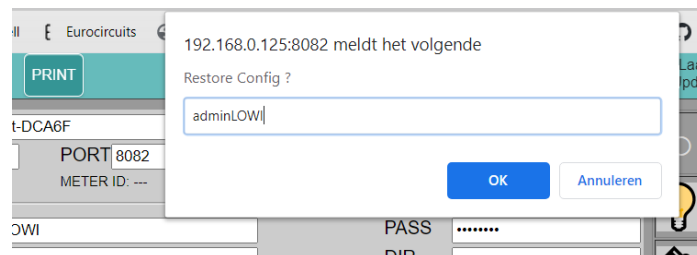


In BRIGHT and DARK mode.



To retrieve last saved configuration:

Go to 'configuration' and press the symbol MQTT, fill in 'adminLOWI' and press OK.



After about 5 seconds you can reload the page or press 'EXIT'. Your previous configuration is now active.

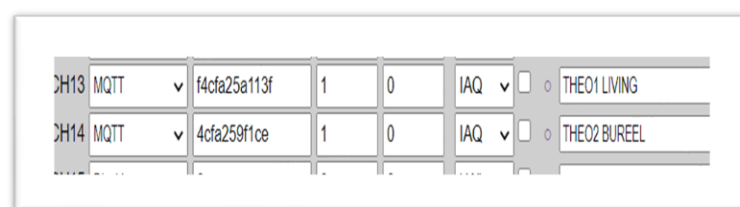
Please note that you do not activate incorrect or incorrect configuration. After this process, you can't go back to your previous version!

3.3.Configuratie LOWI:

Once your broker is connected, you know these settings are fine. Now you can create the desired channels with MQTT.

THEO: read through MQTT

It must have the same broker and token as this LOWI in the WiFi configuration.



Selection is now '**MQTT**', and under 'DeviceID' comes the **Mac** address of the THEO.

The channel no is **ALWAYS 1**, and is filled in under '**Para1**' ('Para2'= 0)

The **Units MUST be IAQ**. Don't forget to fill in a name!

This can be repeated if several THEOs, regardless of location.










LOWI (of ReMI) : receive data from MQTT

Indeed, one can now connect multiple LOWIs/ReMI's via MQTT!

Suppose LOWI1 (Mac cc50e3e3b5a6) has a P1 port connected. Then LOWI2 can also obtain this data so that 2 P1 ports can be displayed.

Under '**Channel Type**', one selects '**MQTT**'. Under '**Device Type**' you enter the Mac **address** of LOWI1.

Under '**Para1**' comes the desired channel no (1-16) of LOWI1. (e.g. P1 IMPORT H+L = CH7)

Channel Type	Device Id	Para1	Para2	Units	Name	
CH01	MQTT 	cc50e3e3b5a6	7	0	kWh  	LOWI1 IMPORT H+L
CH02	MQTT 	cc50e3e3b5a6	10	0	kWh  	LOWI1 P1 H+L
CH03	MQTT 	cc50e3e3b5a6	7	0	kWh  	LOWI1 P2 H+L

Make sure you don't make loops with multiple LOWIs.

Suppose: LOWI2-CH5 retrieves data from LOWI1-CH1. Then LOWI1 is not allowed to retrieve the same data from LOWI2-CH5.

However, LOWI1 can get other data from LOWI2 (e.g. THEOs), as long as they were not published by himself.

WiFi SMARTPLUG: read-in via MQTT

It must have the same broker and token as this LOWI in the WiFi configuration.

Selection is now "**MQTT**", and under "**DeviceId**" comes the **Mac** address of the PLUG.

The channel no is **ALWAYS 1**, and is filled in under '**Para1**' ('**Para2**'= 0)

The '**Units**' **MUST** be '**kWh**'. Don't forget to fill in a name!

This can be repeated if multiple PLUG's, regardless of location.

CH01	P1 port	Import H+L	0	0	kWh	IMPORT nr18
CH02	P1 port	Gas	0	0	kWh	GAS nr18
CH03	MQTT	f008d1d98b20	1	0	kWh	wifiplug nr12
CH04	MQTT	f4cfa259ee0e	1	0	IAQ	Temp nr18
CH05	Disable	0	0	0	kWh	

MEMo3: read through MQTT

And indeed, one can **also** connect **ReMI**, **MEMo3** with **LoWi3** via **MQTT**!

Suppose MEMo3 (Mac 98f4ab275424) has an EMM.630 and on log channel 4 the yield of the solar panels is 'Solar Nr 12'.

Under '**Channel Type**', one selects '**MQTT**'.

Under '**Device Type**' you enter the Mac **address** of MEMo3.

Under '**Para1**' comes the desired log channel no (1-64) of MEMo3. (e.g. Solar F1 = CH4)

Channel Type	Device Id	Para1	Para2	Units		Name
CH01	P1 port	Import-Export	0	0	kWh	IMPORT - EXPORT
CH02	P1 port	Import H+L	0	0	kWh	IMPORT H + L
CH03	P1 port	Export H+L	0	0	kWh	EXPORT H + L
CH04	MQTT	98f4ab275424	4	0	kWh	SOLAR Nr12
CH08	MQTT	f4cfa259f1ce	1	0	IAQ	Temp Nr12 keuken
CH06	MQTT	f4cfa259ee0e	1	0	IAQ	Temp Nr18

Conversely, MEMo3 can also subscribe on MQTT meters (see manual MEMo3), condition is the same broker and account.

Create a new module by entering a fictitious serial number **08Qxxxxx** to log up to 8 MQTT channels per serial number.

For each MQTT channel, choose the **CORRECT MODE** (PLUG=bistable; THEO=AirQ; LoWi3 = P1 port), a unique Modbus address at '**ADDR**'; and at "**para3**" select the log channel number of the linked meter or logger, and the correct unit.

MODULES	MQTT meters	CH	MODE	ADDR	SUBAD	PAR3	LOCKTYPE	PAR4	PAR5	UNIT
CH00001	WiFi Plug E-Heater	-50x5m	Bistable	1	0	1	VOLT			kWh
MAC	000d1d98b20									
IN0	Temp Nr 18	2	AirQ	2	0	1	TEMP			°C
MAC	f4cfa259ee0e									
IN3	LOWI 18 imp h+l	3	P1port	3	0	1	VOLT			kWh
MAC	cc50e3e3b5a6									
IN4	THEO nr12 Keuken	4	AirQ	4	0	1	TEMP			°C
MAC	f008d1d98b20									
IN5	LOWI 12 imp h+l	5	P1port	5	0	2	VOLT			kWh
MAC	f4cfa259ee0e									
IN6	LOWI 12 imp h+l	6	P1port	6	0	3	VOLT			kWh
MAC	f4cfa259ee0e									
IN7		7	Teller				VOLT			kWh
MAC										
IN8		8	Teller				VOLT			kWh
MAC										

4. Attachments:

4.1 WiFi CONFIG PORTAL:

Bring the LOWI-LEON-THEO-ReMI into "access point" mode by placing it under voltage.

The blue LED will light up.

Press and hold the **RESET button** within 3 seconds until the LED stops flashing and lights up constantly.

On your laptop, go to the WiFi settings:

An access point with the name: **2WIRE-LOWI** , **2WIRE-LEON**, **2WIRE-THEO** or **2WIRE-REMI** could now be seen.

Click this name. When it is the first time, you will have to fill in a password:

This is **adminLOWI**, **adminLEON**, **adminTHEO** or **adminREMI** according to the type of device.

After a few seconds, there would be a screen in your web browser, with the configuration of this device.

Depending on your operating system (windows, mac, android...) it can sometimes not be possible that the control panel is automatically displayed.

If you are shown that the device is connected but does not show a configuration, you must type in **8.8.8.8** in your web browser.

Now the control panel will appear.

Select WiFi configuration and the screen below will appear (example THEO)

After the configuration is complete, and "save" is executed, you need to return the WiFi setting to your normal WiFi network. (the LED on the device must go out when the setup and reboot are correct)

THEO MAC T4CTA25A113T

telenet-DCA6F(B)	100%
TelenetWiFiFree	56%
telenet-DCA6F	52%
DIRECT-4HM2020 Series	48%

SSID:

Password:

HTTP - MQTT **BOTH**

IP addr LowI: Port: CH 1-16:

SUBNET:

GATEWAY:

MQTT Broker:

MQTT Token:

MQTT Pass:

save

5. MQTT TOPICS for OEM applications:

For developers, it can be interesting to delve deeper into the use of MQTT.

What is needed are the 'TOPIC's' and the '**payload**'. This allows you to create applications via self-developed apps.

At the moment we have the following products that support MQTT:

- **LOWIv3-REMIV1:** All active channels are published to BROKER every minute. (publish)
Topics: MacAdr/PUB/CH0... CH16
- **MEMO3**– All active channels are published to BROKER every minute. (publish)
Topics: MacAdr/PUB/CH0... CH63
- **LEON:** publishes all available data every minute. (publish)Topics: MacAdr/PUB/CH1
- **THEO:** publishes all available data every minute. (publish) Can receive status RGB LED (subscribe)
Topics:
 - MacAdr/PUB/CH1
 - MacAdr/GET/RGB/CH1
 - MacAdr/SET/RGB/CH1
- **PLUG:** publishes all available data every minute. (publish)Topics: MacAdr/PUB/CH1

5.1.DATA PUBLISH:

All active channels are 'published' every **minute** (**PUBLISH**) in **JSON**format and with the followingtopic: **MAC/PUB/CH1 ... CH63**

e.g. Mac LOWI = cc50e3e3b5a6, channel 12 then the topic is: **cc50e3e3b5a6/PUB/CH12**

De data (payload) is JSON:

- "ident" = MACAdres (always 12 characters)
- "device_CH" = channel no. 1-16(upto 63 at MEMO)
- "Name" = name
- "Type" = type
- "Units" = units
- **"T"= rate (1 = High, 0 = Low) only present if Type = P1**
- "U" = voltage (V)
- "I" = current (mA)
- "P" = power (W of liter bij Gas - Water)
- "HC" = hourly consumption (Wh or litres at Gas - Water)

- "MC" = monthly consumption (Wh of liter bij Gas - Water)
- "CH" = meter reading (High Rate if data from P1 port)
- "CL" = meter reading (Low Rate if data from P1 port, otherwise idem CH)

Type, name and units in connection with connected channel:

Abbreviations and associated units used:

- ident: Mac Address module (LEON-THEO-LOWI-REMI-PLUG-MEMO3)
- device_CH: Channel No in configuration 1-16 (up to 63 at MEMo3)
- name: channel name
- Type:P1 (P1 data)
 - MB (modbus of MQTT data)
 - AIR (temp- vochtigheid ...)
- Units: kWh electricity
 - m3G gas
 - m3W water
 - Varia (mixed data P1 CH0)
 - IAQ (mixed data THEO)

5.2 Dates by type:

5.2.1 Data van P1 fast publish:

If '**P1 FAST PUBLISH**' is checked with LoWi3 and ReMI, theP1 port will be published **every 10 seconds**:

Topic: (LoWi or ReMI) MAC/PUB/CH0

De data (payload) is JSON:

- "ident" = LOWI of ReMI MAC address (12 characters)
- "device_CH" = 0
- "Name" = P1_ALL
- "Type" = P1
- "United" = Vary
- "U" = voltage (V)
- "I" = current (mA)
- "PI" = power import (W)
- "PE" = power export (W)
- "T" = rate (1 = High, 0 = Low)
- "CIH" = counter import H (Wh)
- "CIL" = counter import L (Wh)

- "CEH" = counter export H (Wh)
- "CEL" = counter export L (Wh)
- "CG" = counter gas (liter)
- "CW" = counter water (liter)

5.2.2 Data from Logchannels CH1... CH16 or CH0... CH 63(MEMo3)

Coming from Modbus or MQTT

- "U"= voltage (V)
- "I"= current (mA)
- "P"= power (W/liter Gas/liter Water)
- "HC"= Hour consumption (Wh/liter Gas/liter Water)
- "DC"= Day consumption (Wh/liter Gas/liter Water)
- "MC"= monthly consumption (Wh/liter Gas/liter Water)
- "CH"=counter H (Wh/liter Gas/liter Water)
- "CL"=counter L : always 0

Only for P1 and channel = Import H+L and Export H+L:

- "CIHL"=import H + L (Wh)
- "CEHL"=export H + L (Wh)

AIR:

- "Tp"= temperature (°C decimal ex. 24.8)
- "Rh"= humidity (%)
- "Pa"=air pressure (hPa approximate)
- "IAQ"= air quality (% approximate)
- "RGB"=RGB color hex format #RRGGBB (vb. #00FF00)

Note: The RGB LED follows the status of the P1 port when this port is connected. The following values are valid:

- #990000rood
- #009900groen
- #000099blauw
- #FF0000rood flash
- #00FF00groen flash
- #0000FFblauw flash
- #000000uit

One can manipulate the color of the THEO via an app:

Topic= MacAdr THEO/SET/RGB/CH1

Dates: as mentioned above, back to status P1 = #FFFFFF

5.2.3 Examples of data received (JSON)

1. LEON: {"ident":"MacAdr","device_CH":"1","name":"NAAM ","Type":"RGB","Units":"HEX","T":"rgb val"}

e.g. {"ident":"f4cfa25a9b38","device_CH":"1","name":"living","Type":"RGB","Units":"HEX","T":"#000099"} (T = Rate, blue, not flash)

{"ident":" f4cfa25a9b40","device_CH":"1","name":"keuken","Type":"RGB","Units":"HEX","T":"#FF0000"} (rood, flash)

2. THEO: {"ident":"MacAdr","device_CH":"1","name":"NAAM ","Type":"AIR","Units":"IAQ","Tp":"temp val","Rh":"relative humidity","Pa":"air pressure","IAQ":"IAQ val","RGB":"RGB val"}

Vb. {"ident":" f4cfa25a9b38","device_CH":"1","name":"bureel","Type":"AIR","Units":"IAQ","Tp":"23.6","Rh":"45","Pa":"1012","IAQ":"75","RGB":"#009900"}

(RGB = green, not flash)

Control LED on THEO:

topic: **MAC/ SET/RGB/CH1**

data: RGB status as above (24 bit RGB) #000000 = off

3. LOWI3-REMI: all P1 channel:

- Units: according to P1 channels:
- CH0: all P1 meter readings

{"ident":"MacAdr","device_CH":"1","name":"NAAM ","Type":"P1","Units":"P1 type","U":"volt ","I":"current","P":"power","HC":" Hour consumption","DC":" Day consumption","MC":" monthly consumption","CH":"counterH","CL":"counterL","T":"tarief"}

Vb. {"ident":" f4cfa25a9b74","device_CH":"1","name":"import H","Type":"P1","Units":"IHL","U":"230","I":"450","P":"120","HC":"145","DC":"2480","MC":"12987","CH":"12345","CL":"6789","T":"1"}

CH1: IHL = import H+L, CH2: EHL = export H+L, CH3: G = gas, CH4: W = water, CH5: IH = import H, CH6: IL = import L, CH7: EH = export H, CH8: EL = export L

{"ident":"MacAdr","device_CH":"1","name":"import","Type":"P1","Units":"P1 type","U":"volt val","I":"curr val","P":"power val","HC":" Hour consumption","DC":" Day consumption k","MC":"

```
monthly consumption",
"CH":"counterH","CL":"counterL","T":"tarief"}
```

```
Vb. {"ident":" f4cfa25a9b38","device_CH":"1", "name":  
"import H", "Type":"P1", "Units":"IHL",  
"U":"230", "I":"450", "P":"120",  
"HC":"145", "DC":"2480", "MC":"12987",  
"CH":"12345", "CL":"6789", "T":"1"}
```

5.3 SUBSCRIBE:

If you want to receive data with an app, you must do a subscriber:

TOPIC: MacAdr/PUB/CH1... CH16 where MacAdr can be a LOWI, REMI, MEMO3 or THEO.

At THEO, the channel is always CH1.

Data can be filtered with JSON 'deserialize'

Syntax on most apps: \$.xx where xx are the keywords as mentioned above (U -I -P etc)

(e.g. at THEO: \$. Tp = temperature, \$. CH = counter H)

5.4 GET: Request day logs:

With an external application one can request data for day or monthly graphs and configuration.

ONLY POSSIBLE WITH LOWI3 or REMI !

DALogs G

PUBLISH TOPIC: MacAdr/**GET**/Day/CH1... 16, and
payload is the number of days back to max 9

e.g. request day log CH4 yesterday :

MacAdr/**GET**/Day/CH4, payload = 1 (1 day back)

SUBSCRIBE TOPIC: MacAdr/**POST**/Day/CH1... 16

The answer (payload) is csv – format, separation

After each receiving payload, it is advisable to do an'**UNSUBSCRIBE**'so that with each reload this data is not received again (and unsolicited).

PAYLOAD:
channelNr|year|month|date|units|data1|data2|data
3|data4|data1| etc

Total there are $24h \cdot 12 \cdot 4 = 1152$ data's (resolution 5'),
each data is 32bits

Units: 0 = kWh electr / 1 = m3G gas / 2 = m3W water / 3 = IAQ

Data1 = volt(IAQ) – Data2 = current (Rh) – Data3 = power (t°) Data4 = dagverbruik (luchtdruk)

MAANDLOGS

PUBLISH TOPIC: MacAdr/GET/Month/CH1... 16, and
payload is down to max 11 months

e.g. request monthly log 3 months back :
MacAdr/**GET**/Month/CH4, payload = 3 (3 months back)

SUBSCRIBE TOPIC: MacAdr/**POST**/Month/CH1... 16

The answer (payload) is csv – format, separation

After each receiving payload, it is advisable to do an'**UNSUBSCRIBE**'so that with each reload this data is not received again (and unsolicited).

PAYLOAD:
channelNr|year|month|date|units|data1|data2|data
1| etc

Total there are $30(31) \text{ days} \times 2 = 62$ datas (resolution 24h), each data is 32bits

Units: 0 = kWh electr / 1 = m3G gas / 2 = m3W water / 3 = IAQ

For electr: Data1 = daily consumption (Wh), Data2 = daily cost (eurocent)

At IAQ: $\text{Data1}/65536 = \text{max temp}$, $\text{Data1} \% 65536 = \text{min temp}$

$\text{Data2}/65536 = \text{max Rh}$, $\text{Data2} \% 65536 = \text{min Rh}$

Examples : (FLESPI)

Example log THEO4 at 23:17

```
{
  "ident": "f4cfa2bf41",
  "name": "THEO2",
  "IAQ": "76",
  "Pa": "1008",
  "RGB": "#000099",
  "Rh": "48",
  "Tp": "18.8",
  "Type": "AIR",
  "Units": "IAQ",
  "channel.id": "32753",
  "device.id": "1082077",
  "device.name": "THEO2",
  "device.type.id": "172",
  "ident": "f4cfa25a9b38",
  "plugin": "THERMO1",
  "THERMO1": {
    "protocol.id": "39",
    "server.timestamp": "1598733641.607368",
    "timestamp": "1598733597.466124"
  }
}
```

Messages														31/08/2020 00:00:00		
param1=et_param2=param3=5														31/08/2020 22:59:59		
act	timestamp	id	idext	server	ip	th	hA	LAQ	CIL	P	U	Uname	type	desc		
	31/08/2020 09:12:00			param1=et_param2=param3=5	31/08/20				216		240		P1	0	P1	
	31/08/2020 09:14:00			param1=et_param2=param3=5	31/08/20	24.9	49	81					AIR	1	THEO MDT CH14W	
	31/08/2020 09:14:00			param1=et_param2=param3=5	31/08/20	28.8	45	76					AIR	2	THEO MDT CH14W	
	31/08/2020 09:14:00			param1=et_param2=param3=5	31/08/20	24.9	49	81					AIR	3	THEO MDT CH14L	
	31/08/2020 09:14:00			param1=et_param2=param3=5	31/08/20	21.7	45	78					AIR	4	THEO MDT CH15L	
	31/08/2020 09:14:00			param1=et_param2=param3=5	31/08/20	24.9	49	81					AIR	5	THEO MDT CH14W	
	31/08/2020 09:14:00			param1=et_param2=param3=5	31/08/20	28.8	45	76					AIR	6	THEO MDT CH14W	
	31/08/2020 09:14:00			param1=et_param2=param3=5	31/08/20				31	240	44775	6	CHSL	7	IMPORT HLL	
	31/08/2020 09:14:00			param1=et_param2=param3=5	31/08/20				31	240	44772	0	IMPORT	8	IMPORT H	
	31/08/2020 09:14:00			param1=et_param2=param3=5	31/08/20				0	240	60949	0	CIL	9	IMPORT L	

With a 'REST API' one can use this data for backup
(containers) or calculations

(zie: Flespi Rest Api Documentation)

2-WIRE 06/2021