

## THEO temperature, humidity and energy rate.



THEO is connected to a 5 volt/1A USB power supply and then via the REDIRECT page, either linked with http to a LoWi with **SAME FIXED IP address**, or linked to MQTT and linked to the WiFi network.

For example, THEO receives the energy tariff status from the digital meter via LoWi and displays it with its RGB LED. (RED: day rate, BLUE: night rate, GREEN injection).

A threshold for injection power and a threshold for peak consumption is adjustable in the LoWi configuration. Once past the set threshold, the LED will start flickering either green or red/blue. The greater consumption or injection, the faster the LED flashes. The green flickering only stops at 0 Watt injection, the red/blue stops just below the set threshold. This way, you'll always know the exact moment to turn the dishwasher or dryer on or off. And so a number of household appliances are, as it were, smart home batteries with direct consumption (high-efficiency) and a storage capacity of 2 to xx kWh per day.

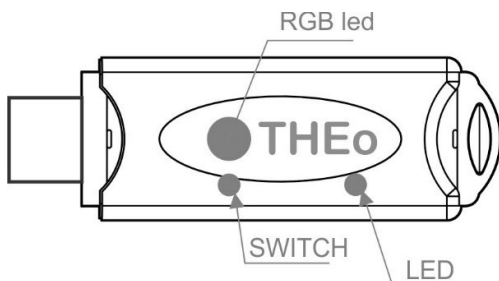
THEO also records the measured air quality (temperature and humidity) and these are transmitted via http and/or mqtt every 5 minutes to the linked web servers for visualization and history.

THEO works with both the LoWi, ReMi, MiLo(http) and MEMo3(mqtt). Via http up to 4 THEO's can be connected to one web server, with MQTT multiple THEO's can be linked to multiple web servers.

Note: Some modems block the http connection and then only MQTT can be connected.

### 1. Connect:

THEO **MUST be in the reception range of the WiFi network and that WiFi network MUST be connected to the Internet.** Check any receipt strength with your smartphone. WiFi only has a range of 5 to 10 meters without obstacles. Preferably no metal objects in the vicinity of the THEO, metal cabinets weaken the WiFi signal.



Connect THEO to a 5 volt USB power supply (not included). The LED will light up constantly at first, and flash continuously after 3 seconds. This means that the THEO is not yet connected to your WiFi network.

*IMPORTANT: Make sure that the distance between THEO, router, smartphone or PC is as short as possible, especially during WiFi pairing and during firmware upgrade!! Afterwards you can use a WiFi extender.*

### WiFi access point:

Now (or within 3 seconds after connecting if the THEO was already paired) press the button for approx. 5 seconds until the LED lights up constantly. The THEO is now a 'WiFi access point', with the name '2-WIRE-THEO'. Select 'networking' on your laptop, **smartphone or tablet** and if it works properly, the list should now read: '2-WIRE-THEO'. **Select this network.** If you are asked for a key (password): 'adminTHEO'.



After a maximum of 1-2 minutes, you will automatically be connected to a REDIRECT screen. If this does not work automatically, surf to **IP address 8.8.8.8 yourself**

NA. If the redirect page is only partially loaded, press the reload page in your web browser.

NA. If you have already made a previous THEO connection, choose in Windows at WiFi network setting '2-WIRE-THEO' WiFi network "do not remember"

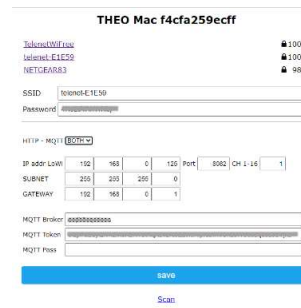
NA. If it doesn't work immediately, turn off your firewall or try to connect manually via smartphone or tablet and check the WiFi signal (go shorter if necessary).

Once on the REDIRECT page, you can enter the network settings.

### REDIRECT PAGE:

Click on '**Configure WiFi**' and a list of networks in your area will appear. You can now select your WiFi network from the list (SSID), and also enter the password of this network.

You can choose to link via http or mqtt or both (try to avoid both at the same time)



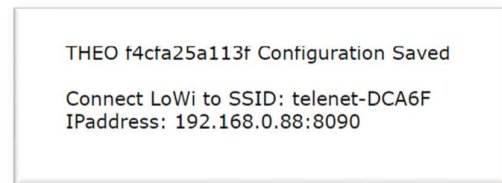
LoWi or ReMi)

### HTTP

Default settings(Fig.1): IPaddress: 192.168.0.125 (your LoWi web page)

- Gateway: 192.168.0.1 (required for internet access!)
- Subnet mask: 255.255.255.0
- Port No: 8082 (also needed for port forwarding for remote control)
- Channel number: 1 (Transmit this unique number 1..16 afterwards when configured in

These default IP addresses must be adjusted according to your own network and must be **IDENTICAL** (also port number) to those entered in the **LoWi** module. The selector 'HTTP-MQTT' must be set to 'HTTP', and a channel number CH(1-16) must be entered. Ex.15



After

entering SSID, password and IP address, SUBNETMASK, Gateway and port number (Fig), press SAVE and you will receive confirmation of the set THEO IP address.

### MQTT

If you have an MQTT Token, select MQTT on the REDIRECT page and enter the MQTT account parameters URL, token and possible password (not needed with 2-wire token).

As soon as THEO and LoWi are connected via http or via MQTT, the RGB LED shows the status of the tariff and temperatures are logged.

*NB: If you are not familiar with networking, it is better to ask a network specialist!*

### 2.. Firmware Upgrade:

A firmware upgrade can only be done via the push button on the module and only on a linked THEO with WiFi and internet access.

If you connect a paired THEO, you will see a quick flicker of the LED 2x during start-up. The first indicates connection to the internet, the second indicates synchronization with an NTP clock and only then does the heart rate LED follow. Now press the push button for approx. 5 seconds until the LED lights up continuously and then release. THEO will now upgrade itself and reboot.

### 3. Injection level configuration via tablet or PC:

In the LoWi3 setup page:

[LINK VIA HTTP:](#)

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 number is entered (e.g. 15), AND the 'Units' must be set to 'IAQ'. Don't forget to give a name to this channel! (blank name = inactive!)  
If there are multiple THEO's, then each THEO MUST be given a unique channel number (1-16) !!

CH10	THEO	0	15	0	IAQ	THEO CH15
CH11	Disable	0	0	0	KWh	

#### CONNECTION VIA MQTT :

Here, THEo and LoWi (or ReMI, or MEMO3) must have the same MQTT account settings in order to connect.

#### Connection with LoWi3 and ReMI:

Then you can create a channel of type 'MQTT', enter the MAC address of THEo at 'device id', the number '1' (first and only channel of THEo) at 'para1' and the 'Units' must be set to 'IAQ'. Don't forget to give a name to this channel! (blank name = inactive!)

Channel Type	Device Id	Para1	Para2	Units	Name
CH06	MQTT	f4cfa259ee0e	1	IAQ	THEO Nr 18
CH01	P1 sort	Import-Export	0	KWh	IMPORT - EXPORT

#### Link with MEMO3:

Create a new channel here, module "MQTT" and mode "AirQ" This module does NOT communicate via Modbus, so set Modbus address and sub address to '0' and then enter MAC address and CHnr to '1', give the channel a recognizable name and press "SAVE".

CH ID	Module	Mode	ROOM TP	HUMID	VOG	FLOW	...
ADRICH	DAG	MANAD	POOR	0.6°C	6%	6%	...
GENERATE		BT	0	0	0	0	...
TEST RM							...
SAVE		LOAD	0	THEO Nr 18			...

#### THRESHOLDS EXPORT MAX AND IMPORT MIN

Via the LoWi or ReMI configuration page, you can enter the minimum injection power at 'EXPORT MIN' from when the LED flickers green. Only with 0 Watt injection does the green LED switch back to red or blue.

UPGRADING v21 7.2.1 STOP	SAVE	EXIT				
STYLE B/W						
COST(ct):	ELEC_H 28	ELEC_L 15	GAS 70	WATER 520		
WARNING IMPORT MAX		3000	WARNING EXPORT MIN		1500	
SHORT		P1 PROTOCOL	EE	P1 Status	12Z	
Channel Type	Device Id	Para1	Para2	Units	Name	
CH01	P1 sort	Import-Export	0	0	KWh	IMPORT - EXPORT
CH02	P1 sort	Import H-L	0	0	KWh	IMPORT H - L

At 'IMPORT MAX' you can enter the threshold for maximum consumption. Above the threshold, the LED will flash red or blue, below the threshold the flickering will stop. This way, you'll know exactly when you have a peak consumption.

#### 4. General remark:

- A THEo ONLY works in combination with a linked LoWi or ReMI web server. With MEMO3 only MQTT measurement air quality works and not the RGB rate coupling.
- Up to 4 THEo modules can be linked via HTTP per LoWi or MiLo web server. Via MQTT you can connect THEo to a LoWi or ReMI channel and then link this channel to multiple web servers.
- You can also read the current energy rate via the LoWi webpage, but THEo is much more visible so that every housemate knows when the night rate starts or when energy becomes free and green. This way, you can use your household appliances as a battery. And at the same time, you have an idea of the energy course (temperature) and air quality in the measured room.
- Update of the LED status is every minute
- If THEo is already paired on WiFi and you want to change the WiFi settings, press the switch within 3 seconds of startup to enter REDIRECT mode and perform the 'manual pairing' procedure again.
- MQTT: THEo is also equipped to connect via MQTT. The MQTT configuration is also done via the REDIRECT page. To do this, you will need an MQTT Token.

- We notice that some WiFi routers (white Telenet modem) disrupt the http communication between LoWi and THEo, causing THEo to crash, the solution is to connect to another WiFi router or make a connection via MQTT.

#### 5. Technical data:

##### General:

- WiFi network 802.11 b/g/n/e/i (2.4 GHz), which needs access to the Internet.
- Tx power: 802.11 b: +20 dBm 802.11 g: +17 dBm 802.11 n: +14 dBm
- Rx Sensitivity: 802.11 b: -91 dbm (11 Mbps) 802.11 g: -75 dbm (54 Mbps) 802.11 n: -72 dbm (MCS7)
- Security: WPA/WPA2, Encryption: WEP/TKIP/AES
- Network Protocol: IPv4, TCP/UDP/HTTP/FTP
- Built-in antenna.

##### Operating conditions:

Operating temperature range: 10 °C to 50 °C  
Storage temperature range: -10 °C to 60 °C  
Maximum humidity: 90 %, no moisture condensation  
Max. mounting height : 2000m

##### Physical Properties:

Housing: plastic, self-extinguishing according to . UL94-V0  
Degree of protection: IP20, EN 60529  
Indoor installation  
Dimensions (H x W x L): approx. 70mm x30mm x 7mm  
Weight: about 33 grams

##### Connections:

Power supply: via USB (not included). Average consumption: 5V/100mA, peak up to 160mA

##### Labels:

RoHS: Non-toxic, cf. WEEE/RoHS Directives  
CE: In accordance with EMC and low voltage directive: HBES – EN 50090-2-2 and EN60950 – 1: 2006.

#### 6. Installation instructions

The installation is preferably carried out by someone with at least a basic knowledge of PC/networking.

#### 7. Support

Would you like to have the product repaired in case of a possible defect? Please contact your supplier or order "inspection module" online.

#### 8. Warranty provisions

The warranty period is two years from the date of delivery. The delivery date is the invoice date of purchase of the product by the consumer. If no invoice is available, the production date applies. The consumer is obliged to inform Qonnex bvba in writing of the lack of conformity, and this at the latest within two months after discovery. In the event of a lack of conformity, the consumer is only entitled to a free repair or replacement of the product, which is determined by Qonnex. Qonnex is not responsible for a defect or damage resulting from incorrect installation, improper or negligent use, incorrect operation, transformation of the product, maintenance in violation of the maintenance instructions or an external cause such as moisture damage or damage due to overvoltage. The mandatory provisions in national legislation on the sale of consumer goods and the protection of consumers in countries where Qonnex sells directly or through distributors, agents or permanent representatives take precedence over the above provisions.

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