

THEO records room temperature and humidity, and shows energy rate of the digital meter



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 the **same FIXED IP address**, or linked to MQTT and linked to the WiFi network.

For example, THEO gets the energy tariff status from the digital meter via LoWi and he shows it with his RGB LED. (RED: daily rate, BLUE: nightly rate, GREEN injection).

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

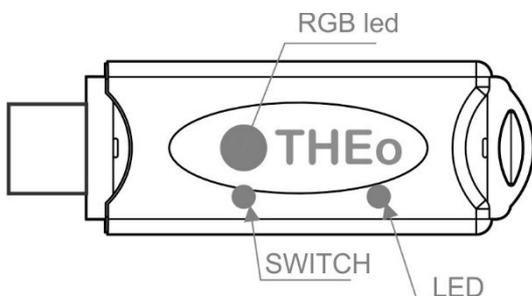
THEO also records the measured air quality (temperature and humidity) and these are transmitted to the linked web servers for visualization and history every 5 minutes via http and/or mqtt.

THEO works with both the LoWi, ReMI, MiLo(http) and MEMo3(mqtt). Via http, up to 4 THEOs can be connected to a single web server, with MQTT multiple THEOs can be linked to multiple web servers.

1. connect:

THEO **MUST be** in the receiving range of the WiFi network and that WiFi network **MUST be** connected to the Internet. Check any receiving strength with your smartphone.

Preferably no metal objects near the THEO, metal cabinets weaken the WiFi signal.



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

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



WiFi access point:

Now press the button (or within 3 seconds after connecting if the THEO has already been paired) for about 5 seconds until the LED is constantly lit. The THEO is now a 'WiFi access point', called '2-WIRE-THEO'. Choose 'networking' on your laptop, smartphone or tablet and if it works correctly, it should now be in the list: '2-WIRE-THEO'. **Select this network.** If you are asked for a key (password): **'adminTHEO'**.

You will automatically be redirected to a REDIRECT screen after a maximum of 1-2min. If this is not possible, please surf to **IP address 8.8.8.8**

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

Note: If you can't immediately turn off your firewall or try to pair manually via smartphone or tablet and check the Wi-Fi signal (if necessary, shorten the distance).

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

REDIRECT PAGE:

Click on '**Configure WiFi**' and a list of networks will appear in your vicinity. 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)

THEO Mac f4cfa259ecff

TelenetWiFi: 100%
telenet-E1E52: 100%
NETGEAR83: 98%

SSID: telenet-E1E52
Password: [REDACTED]

HTTP - MQTT (HTTP)

IP addr: LoWi: 192 168 0 125 Port: 8082 CH: 1-16: 1
SUBNET: 255 255 255 0
GATEWAY: 192 168 0 1

MQTT Broker: 8888888888
MQTT Token: [REDACTED]
MQTT Pass: [REDACTED]

SAVE

Scan

HTTP

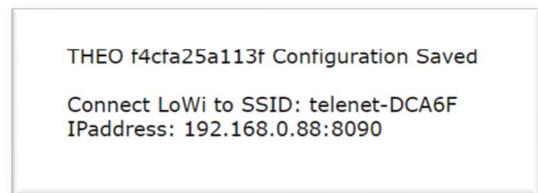
Default settings(Fig.1):

- IP address: 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 required for port forwarding in remote control)
- Channel number: 1 (Pass this unique number 1..16 afterwards when configuration in LoWi or

ReMI)

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

After filling in SSID, password and IP adres, SUBNETMASK, Gateway and portsummer(Fig), press SAVE and you will get confirmation of the set THEO IP address.



MQTT

If you have an MQTT subscription, select MQTT on the REDIRECT page and enter the MQTT account parameters URL, token and possible password.

Once THEO and LoWi are connected via http or via MQTT, the RGB LED shows the status of the rate and temperatures are logged.

Note: If you are not familiar with networking, better question a network specialist!

2.. Upgrade firmware:

A firmware upgrade can only be done here 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 twice during the start-up. The first indicates connection to the Internet, the second to synchronization with an NTP clock and only then does the heart rate follow LED. Now press the push button for about 5 seconds until the LED lights up continuously and then release. THEO will now upgrade itself and restart it.

3. Configuration via tablet of PC:

In the LoWi3 setup page:

LINK VIA HTTP:

With the linked LoWi, the one 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 no (1-16) !!

LINK VIA MQTT:

Here, THEo and LoWi (or ReMi, or MEMo3) must have the same MQTT account settings to link.

Link to LoWi3 and ReMi:

You can then create a channel of Type 'MQTT', enter the MAC address of THEo under 'device id', the number '1' (first and only channel of THEo) under 'para1' **and** the 'Units' must be set to 'IAQ'. Don't forget to give a name to this channel! (blank name = not active !)

Channel Type	Device Id	Para1	Para2	Units	Name
CH06 MQTT	f4cfa259ee0e	1	0	IAQ	THEo Nr 18
CH01 P1 port	Import-Export	0	0	kWh	IMPORT-EXPORT

Link to MEMo3:

Create a fictitious MQTT module with serial number **08Qxxxxx** and then enter your own name and MAC address, 'MODE' AirQ, unique Modbus address 'ADDR' and 'SUBAD', Para 3 the number '1' (first and only channel of THEo) **and** the 'Units' must be at 'ppm'.

08Q05091	MQTT module	CH1	MODE	ADDR	SUBAD	PARA3	LOGTYPE	PARA5	PARA6	UNIT
R1	WiFi Plug E-Heater f008d1d98e20	1	Bistabil	1	0	1	VOLT			kWh
R2	THEo Nr 18 f4cfa259ee0e	2	AirQ	2	0	1	TEMP			ppm

THRESHOLDS EXPORT MAX AND IMPORTMIN

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

With 'IMPORT MAX' SNO2 you can then enter the threshold for maximum consumption. Above the threshold, the LED will flash red or blue, below the threshold the flickering stops. This way you know exactly when you have a peak consumption.

4. General note:

- A THEo only works in combination with a linked LoWi, MiLo or ReMi web server. With MEMo3 only MQTT measurement of air quality works and not the RGB tariff link.
- Up to 4 THEo modules can be linked via HTTP per LoWi or MiLo web server. Via MQTT, multiple THEos can be linked to multiple web servers simultaneously.
- The current energy rate can also be read via the LoWi webpage, but THEo is much more visible so that every roommate knows when the nightly rate starts or when energy becomes free and green. This way you use your household appliances as a battery. And at the same time you have an idea of the energy turnover (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 still want to change the WiFi settings, press the switch within 3 seconds of booting to enter REDIRECT mode and perform the 'manual pairing' procedure again.
- MQTT: THEo is also equipped to connect via MQTT. The configuration of this is also done via the REDIRECT page. You do need an MQTT subscription for this.
- We notice that some WiFi routers (white Telenet modem) interfere with http communication between LoWi and THEo causing THEo to crash, the solution to be paired with another WiFi router or making a link via MQTT.

5. Technical data:**general:**

WiFi network 802.11 b/g/n/e/i (2.4 GHz), which needs internet access.

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
Range storage temperature: -10 °C to 60 °C
Maximum humidity: 90 %, no moisture condensation
Max. mounting height : 2000m

Physical properties:

Housing: plastic, self-extinguishing vlg. UL94-V0
Degree of protection: IP20, EN 60529
Indoor mounting
Dimensions (h x w x l): approx 70mm x30mm x 7mm
Weight: about 33 grams

Connections:

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

Labels:

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

6. Installation

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

7. Support

Do you want to exchange the product in case of a defect? Please contact your wholesaler or the 2-wire support service. The contact details can be found on our website www.2-wire.net/contact/

8. Warranty

The warranty period is two years from the delivery date. 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 about the lack of conformity, and this no later than two months after adoption. 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 any defect or damage resulting from incorrect installation, improper or negligent use, improper operation, transformation of the product, maintenance in violation of maintenance regulations 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 shall take precedence over the above provisions

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