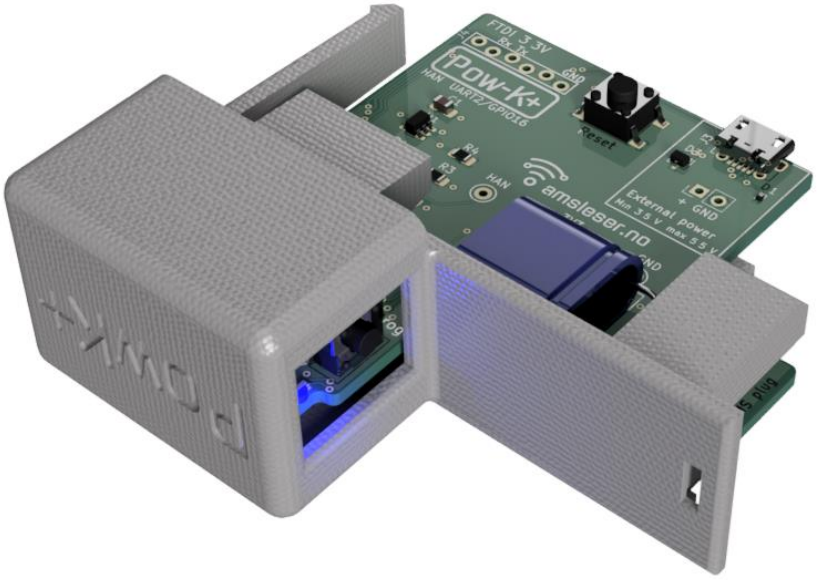
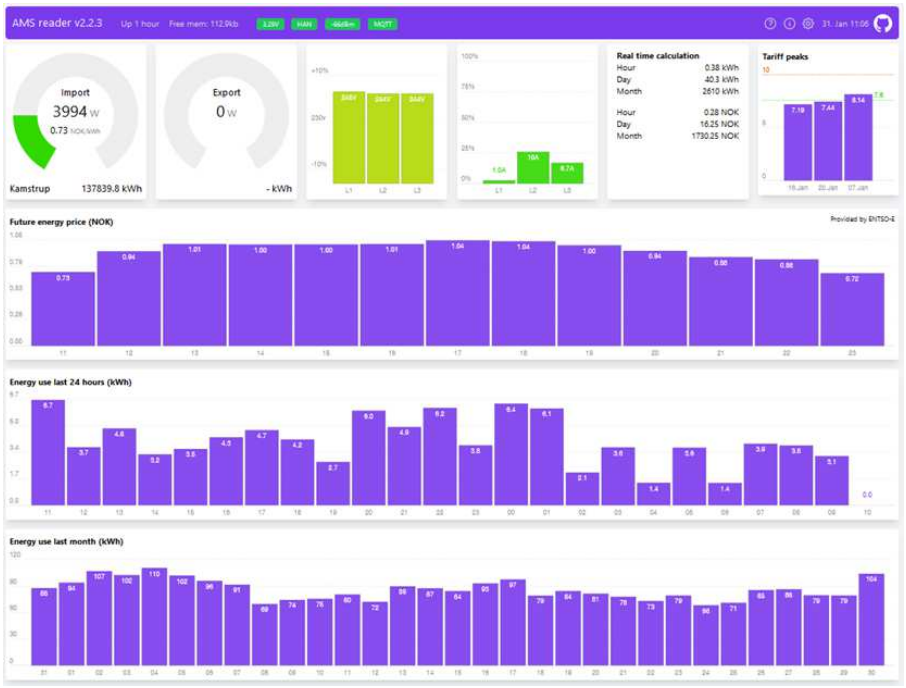
User Manual

Pow-K / Pow-K+





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1 Introduction

User manual for **Pow-K+** sold by amsleser.no. It covers also the discontinued model Pow-K (which was based on ESP8266; ESP12E/F).

There is a separate User Manual available for the firmware, please see the product page in the webshop https://amsleser.no → Vedlegg/Attachment

The Pow-K/K+ card was initially designed to replace the original board in the HAN-NVE plug-in module[1] used on Kamstrup Omnipower power meters. It can also be bought with a holder, to install it without reusing the enclosure from a HAN-NVE plug-in module.

The connects to the user wifi network, reads all data reported by the meter and displays the data on a web page on a device connected to the user's local wifi network.

It can be configured to forward the data to an MQTT broker (internal or external/cloud service), that can be read by a home automation system.

The device collects and displays day-ahead electricity prices for European countries and price regions.

It is entirely powered from the Kamstrup meter, no external power is needed.

Before using the Pow-K/K+ you need to order activation of the HAN port from your local grid company. In Norway this can in most cases be done by logging in to "My page" / "Min side" on the website of the grid company, the port will then usually then be activated within 1-3 days. For other countries: Check with your grid company.

We recommend using latest firmware version. If the device has access to internet, a notice will appear on the main page when a new version is available.

Pow-K+ can be purchased from our webshop: https://amsleser.no/

Seller is Utilitech AS, a company registered in the Norwegian business register under the registration number NO930307661MVA.

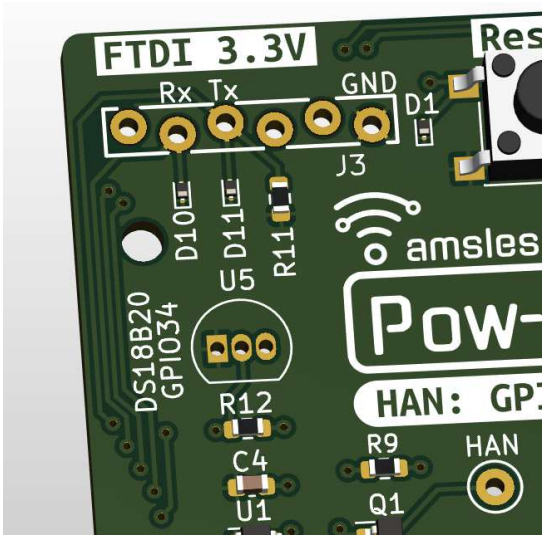
[1] https://www.kamstrup.com/en-en/electricity-solutions/meters-devices/modules/hannve

2 Technical specification

- Power meter interface: Plugs into the expansion bay of Kamstrup power meters
- Connection: Wi-Fi 2,4 GHz b/g/n
- Data refresh rate: The Kamstrup Omnipower sends data each 10 second
- Size: 73,5 x 70 x 222 mm (including 3D printed holder)
- Weight: 40 grams
- Voltage
  - 4,15 V when plugged into the Kamstrup meter
  - 5V when powered from the USB connector (not plugged into the meter)
- Operating power consumption: 70 mA
- Maximum power consumption (during firmware upgrade): 135mA
- Protection class: IP20 (not waterproof)
- Mainly relevant in Sweden:
  Pow-K with layout version v1.6.1 and newer (printed on the board) can read Kamstrup Omnipower meters configured as "P1 port". This requires firmware v2.3.5 or newer.

3 Optional temperature sensor

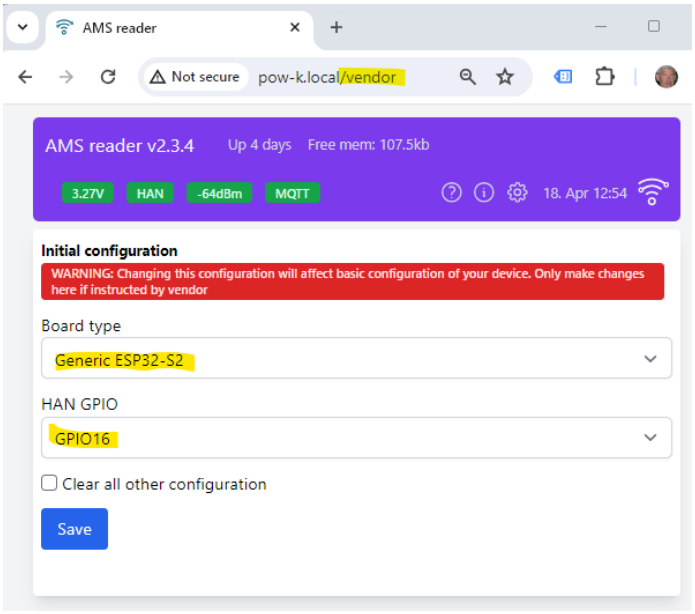
Boards with layout version v1.6.1 and newer can accommodate a user-installed temperature sensor, type **Dallas DS18B20.** The necessary pullup resistor is installed.



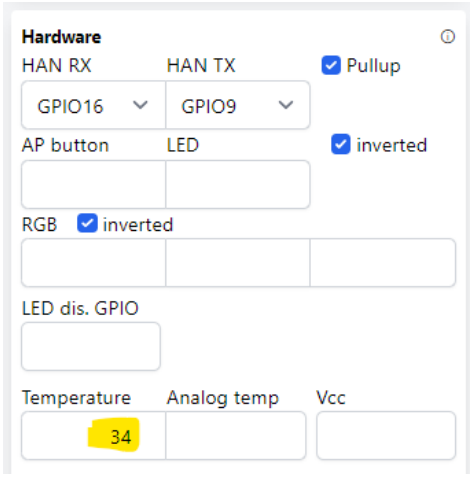
Temperature sensor can be bought from mouser.com, digikey.com or other electronic component outlet.

To activate the temperature sensor, user must change the hardware setting:

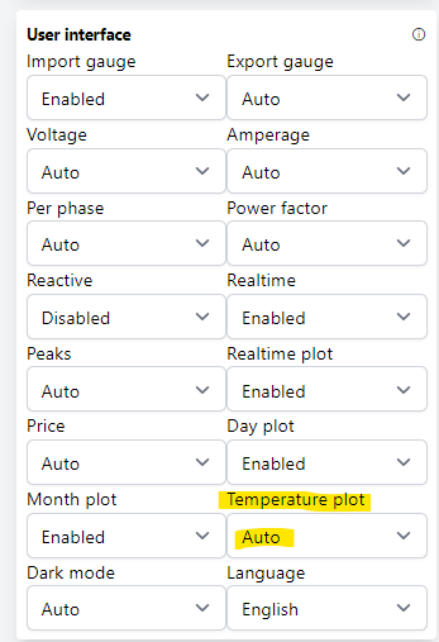
1. Add "/vendor" to the URL and select "Generic ESP32-S2" and "GPIO16" from the dropdown lists:



2. Click "Save"
3. Open the Config page
4. You will now see a modified "Hardware" tile, with a field named "Temperature", which must be set to "34" (corresponding to "GPIO34" marked on the PCB):



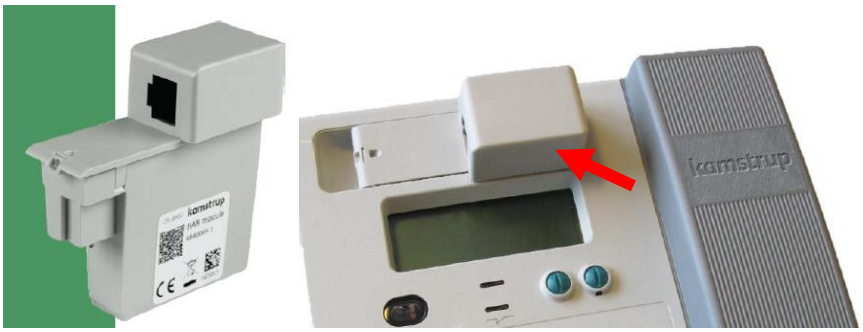
5. In the "User interface" tile, ensure that "Temperature plot" is set to "Auto" or "Enabled":



6. Click the blue "Save" button (bottom right) to save the changes.

4 Installing the board in a Kamstrup HAN-NVE module

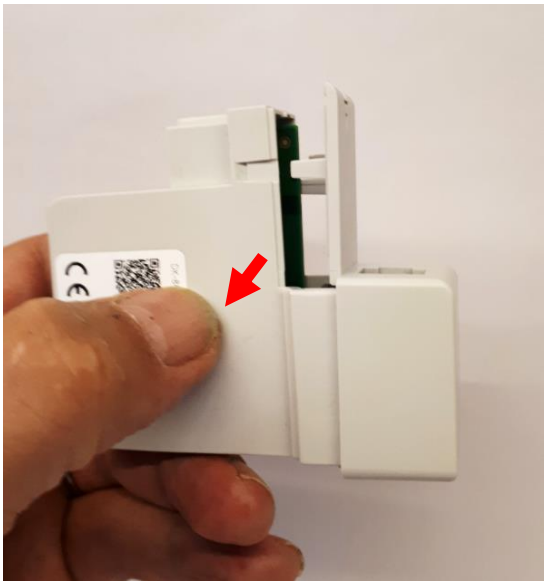
The board can be installed to replace the original card of a Kamstrup HAN-NVE module:

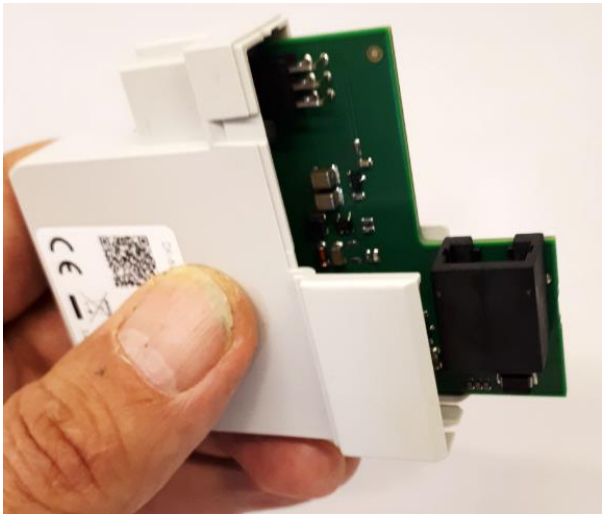


Procedure

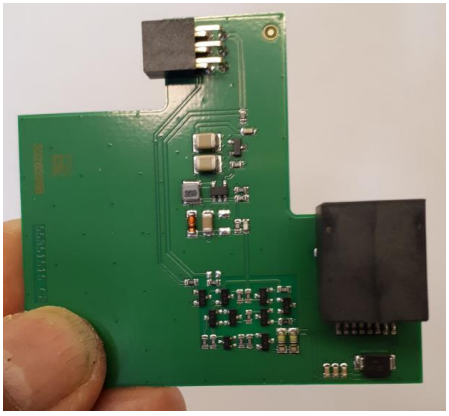
If the HAN-NVE module is installed in the meter: Pull it out horizontally. It may require some force.

Remove the lid. It is released by pressing on each side of the box in the area indicated by red arrow below:



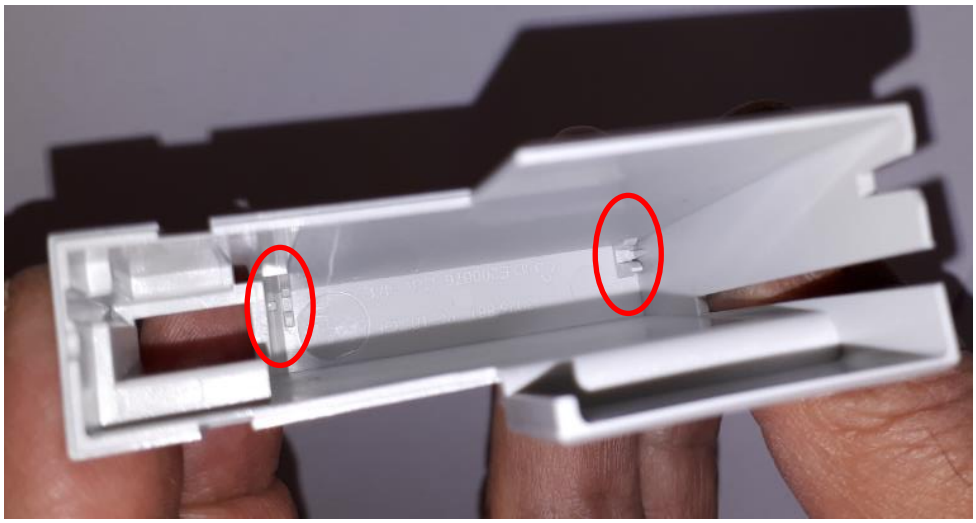


Remove the original card, place it in the protective bag the Pow-K was delivered in – and store it safely with the meter.

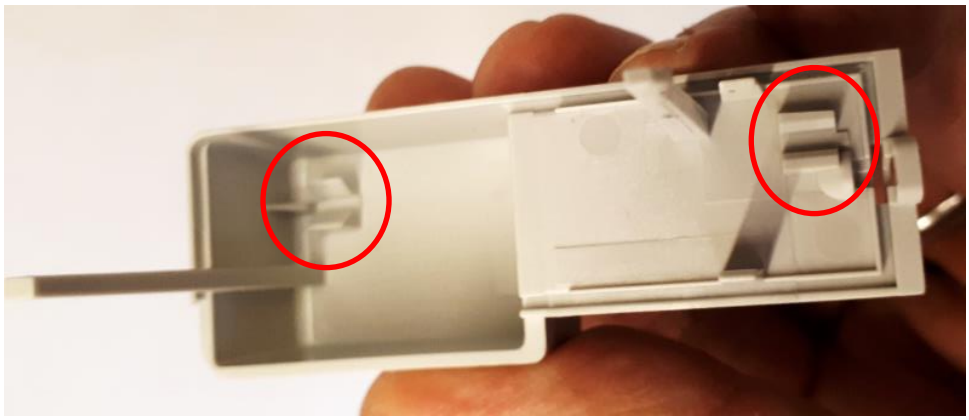


The card is held in position by four slots: Two in the bottom of the enclosure, two in the lid:

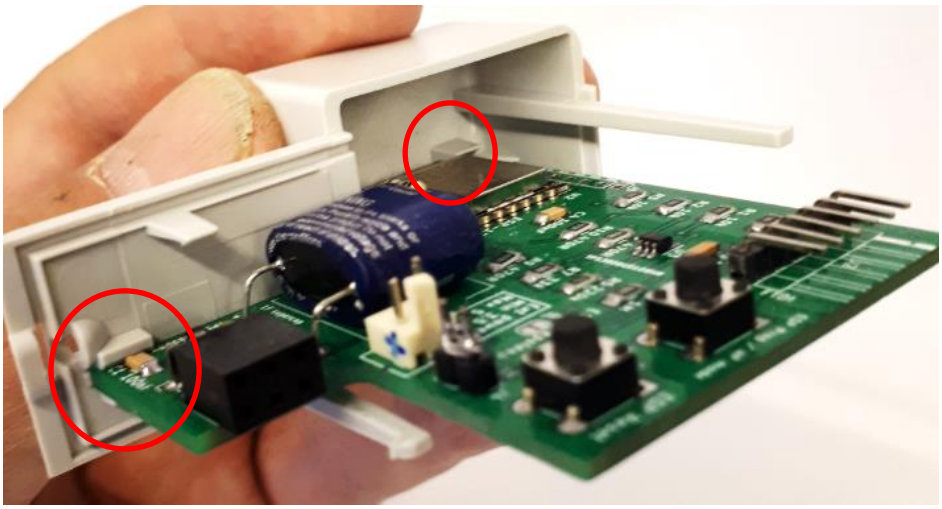
In the enclosure:



In the lid:



Position the Pow-K card on the lid, ensure it is seated in the slots:



(Photo shows a previous version of the Pow-K card.)

Place the enclosure over the card, pull lid and enclosure together until it snaps in place:

Insert the module in the Kamstrup meter. .

When you insert it, it takes around 30 seconds of charging of the supercapacitor until the board boots, indicated by a rapid color sequence on the LED.

Each time the meter sends data (10 second interval) the LED will blink blue, indicating arriving data.

A green blink on the LED right after data reception indicates that the board has recognized the data as a valid payload.