

## Advanced energy optimisation

Ouman Optiflexiot is a product developed for the energy optimisation of electrically heated buildings. The device uses smart and advanced algorithms to generate forecasts of future heating demands based on spot prices of electricity and weather forecasts. Forecasts help choose the most affordable hours for heating to make significant savings in heating costs. If necessary, heat is stored during the cheapest hours so that no heating is required during the most expensive hours.



Optiflexiot knows when heating is on. The device calculates the energy consumption according to the time when heating is on and learns to estimate the building's daily energy demands at different outdoor temperatures. Optiflexiot provides price control with information about energy demands based on weather forecasts.

Electricity price control sets the hours with the lowest prices during the current day for the set number of hours. The device uses the hourly energy prices of the day in optimisation. Heating is controlled using either the daily average price, a set price limit or time-based heating control.

Heating can be controlled by Optiflexiot, or information about heating demands can be transmitted to an external device such as a heat pump. In this case, the heat pump takes care of heating control. If required, Optiflexiot can change the setpoint of the device being controlled and give a heating permit.



**Can be connected to the existing automation system with the Modbus TCP/IP and/or Modbus RTU interfaces.**

### Four different electrical loads can be controlled simultaneously.

The device can simultaneously control four different electrical loads independently of each other. You can select separate control methods for each:

- > Cheapest hours on demand
- > Hours cheaper than the average price
- > Fixed price limit, cheaper hours
- > PWM control by price

### Installation-friendly

Optiflexiot is designed to be installed in various environments. Its compact size makes it easy to find an installation location.

Thanks to DIN rail mounting, installation in the electric switchboard is effortless. Clear connections make the installation of cables easy, thus speeding up connection and deployment.

# Energy control methods

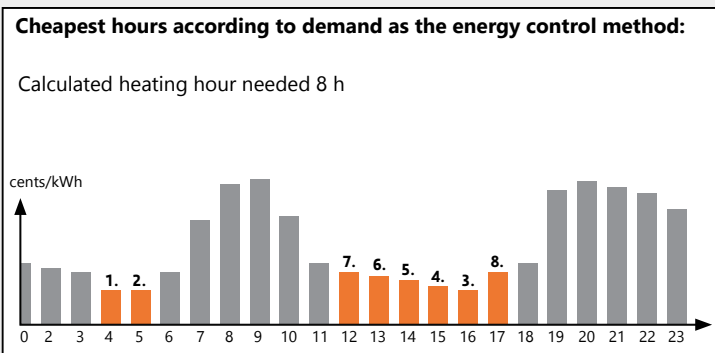
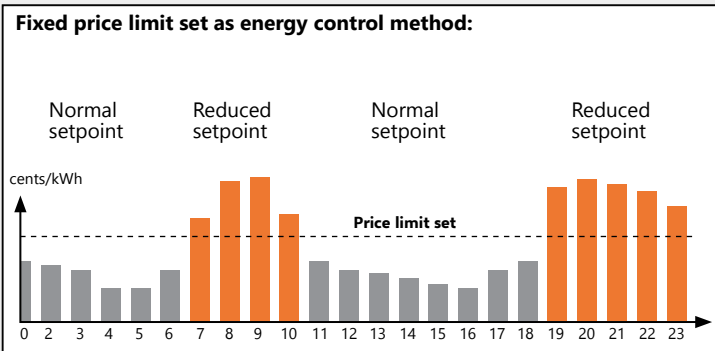
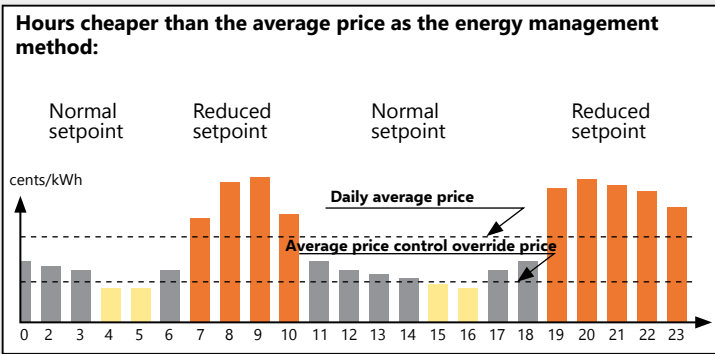
Optiflexiot can be used to control four separate independent electrical loads. A separate energy control method can be selected for each electrical load. You can choose from following control methods: daily average price, a fixed price limit that can be set, or the cheapest hours according to the time-based heating demand or PWM control by price.

When the energy control method is hours cheaper than the average price, a lower setpoint value will be used during the hours that exceed the average price. In other words, less heating is applied and the building is allowed to become slightly cooler. When the price of electric energy falls below the daily average price, the building will again be heated normally. An override of the average price control is also available in this energy control method. When the price falls below the set hourly price, the heating permit enters into force. This function can also use the energy demand forecast, which is based on the weather forecast for the current day and the energy demand forecast for the building.

If an energy control mode with a fixed price limit is set, a reduced setpoint is used when the limit is exceeded. Otherwise, the heating operates with the normal setpoint.

If the energy control method according to the cheapest hours is selected, the required number of the cheapest hours for heating with the normal setpoint is selected according to the heating demand. This function can use the energy demand forecast, which is based on the weather forecast for the current day and the energy demand forecast for the building.

If energy control is not enabled, a continuous heating permit will be used. A continuous heating permit is also used in any malfunctions when the device does not receive weather forecast data and cannot perform energy control.



## Electricity spot price and weather forecast integration built in the device without separate recurring costs

### EASY SETUP

In the configuration menu, you can enable the desired electrical load controls and make the necessary energy control method selections, and determine whether Optiflexiot acts as a heating control device or whether heating is controlled by an external device.

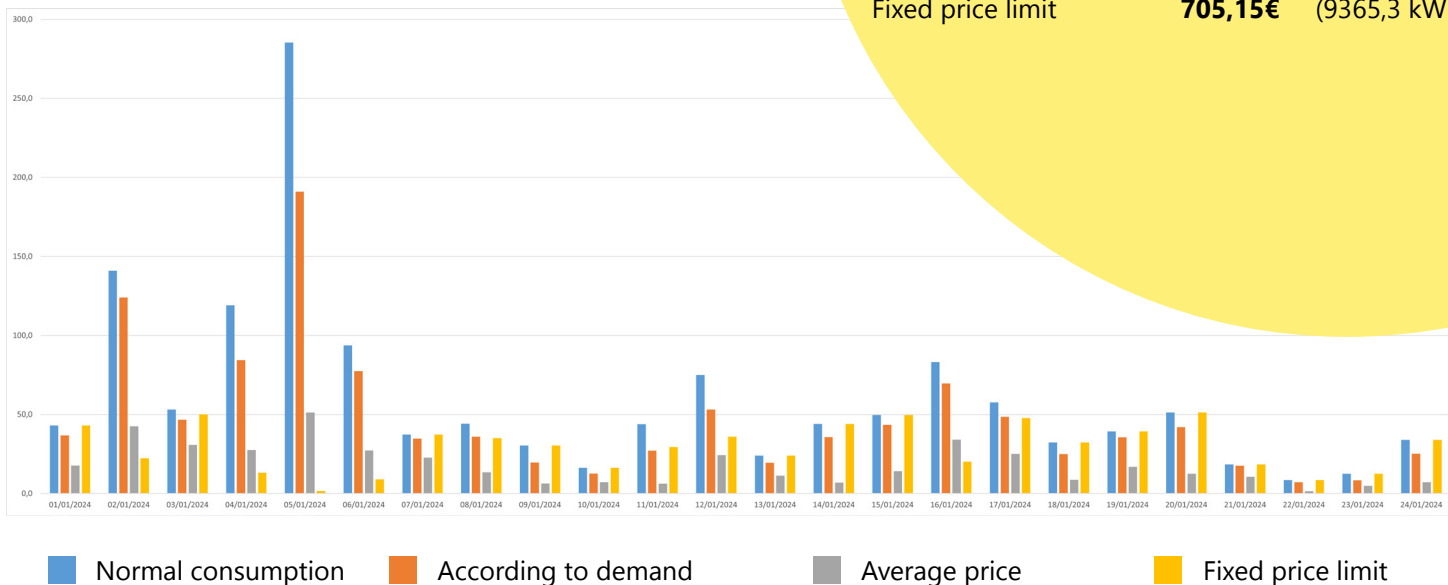


### GRAPHIC TREND DISPLAY FOR EASY ADJUSTMENTS

Optiflexiot enables the monitoring of temperature changes in the graphic trend display, making it easier to understand and adjust the control process. The operation of each electrical load can be viewed separately.



The attached image shows calculated example consumptions over a 24-day evaluation period using different energy control methods. The consumption figures are based on actual data from a real-life site.



### The calculated costs for the evaluation period:

Normal consumption (spot)	<b>1436,91€</b>	(11876,7 kWh)
According to demand	<b>1121,03€</b>	(11876,7 kWh)
Average price	<b>430,36€</b>	(5566,4 kWh)
Fixed price limit	<b>705,15€</b>	(9365,3 kWh)

## Optiflexiot

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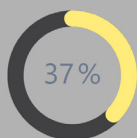
Sumalarm A

Sumalarm B

0 °C

TEMPERATURE FORECAST

CONTROL 1



37%

off

Heating status

Off

Realized savings per day

1.4 €/day

Energyconsumption

78.4 kWh

Used energy mean price

6 cnt/kWh

O1 Temperaturesensor 1

21.2 °C

O1 Temperaturesensor 2

37.6 °C

CONTROL 2

CONTROL 3

CONTROL 4

SPOT PRICE INDEX

1.33

AVERAGE PRICE TODAY

9.02

snt / kWh

SPOT PRICES TODAY



SPOT PRICES TOMORROW

## Dashboard

The functions of Optiflexiot can be viewed with a web browser through the web server built in the device. The dashboard shows, at a single glance, comprehensive information about the statuses of the energy controls in use, as well as calculated daily savings and energy consumption. The current electricity price index, average daily price and spot prices in relation to the average daily price are also clearly presented. The dashboard also shows any alarms.

The device functions can also be controlled and viewed using SMS messages. In this case, an optional GSM modem and SMS interface are required. Information about alarms can also be transmitted by text messages. SMS control is based on keywords.

If you want to connect Optiflexiot to a larger system and you need more professional remote operations, the device can also be connected to the online Ounet control room.