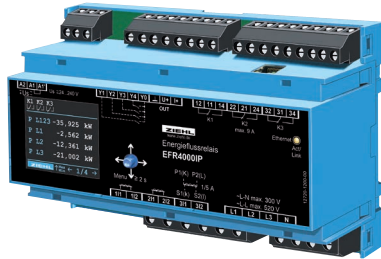


# Relay for Energy Flow EFR4000IP

Optimization of consumption of own energy

Integrated Webserver, IP-Connection, Zero Export Device, measuring transducer for power

## EFR4000IP



### Part numbers:

**EFR4000IP**      **S225761**

Suitable current transformer (split core): 60/1A, class 3 0,4 VA

**KBR 18S**      **S225770**

Suitable mini current transformer: 64/1A, class 1 0,5 VA

**CTM7**      **S225780**

The EFR measures the energy flow in all 3 phases and calculates the mean value.

Is sufficient own power left, the EFR4000IP switches on up to three consumers and ensures that the power is consumed in the house.

This is relatively simple if a PV system feeds uniformly under a clear sky and consumers with constant power consumption, such as heat pumps or heating elements, are connected. Particularly suitable are consumers that consume a lot of energy and can be switched frequently, for example boilers.

It becomes more complicated when the generation varies because of clouds before the sun and consumers do not continuously draw current as washers, dryers, irons or stoves.

The analog output can regulate a consumer stepless and thus achieve a yet higher rate of own consumption. When using phase angle controls the specifications of the grid providers have to be obeyed.

Energy flow is always evaluated and displayed, as seen from a power meter for purchasing energy: purchase from public grid is positive, fed in energy reduces the bill and is therefore negative (- sign).

The EFR4000IP can optimize the consumption of own energy even under difficult conditions.

RelaysforenergyflowEFR4000IP monitor the current flow between public power grid and generating plant / consumer.

Operation is made comfortably via integrated webserver or directly at the device. Measured values are displayed neatly arranged at device on monitor.

When the own power plant generates more power than actually is consumed it often is more

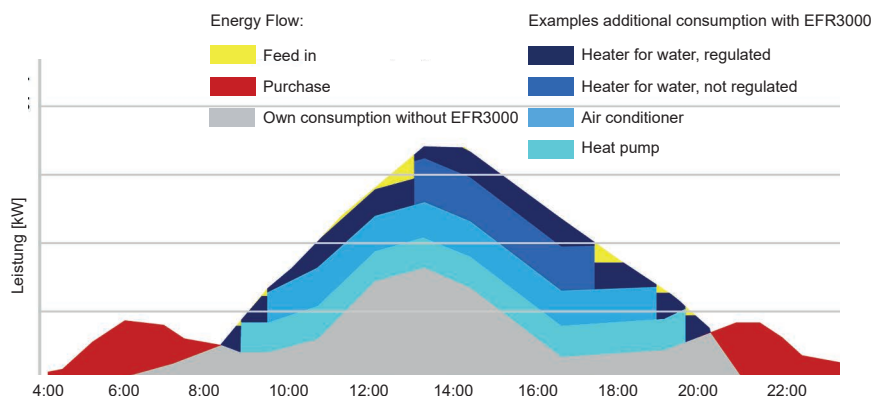
economical to consume the excess energy self. This is especially reasonable when the difference is high between the price you pay to the grid provider and the price the provider pays for fed in energy.

### Functions:

- Shift own consumption into times with high generation of energy
- Switch on consumers when you have overflow of energy
- Increase the share of consumed own energy
- intelligent control of consumers

### Features and functions:

- Switching of up to 3 consumers: the largest consumer, ranked 1-2-3 or combination of 3 consumers (7 levels)
- Power consumption of the connected consumers
- Switch on points. At which energy flow consumers are switched on
- Switch on delay of consumers. Short lowering in consumption (by clocking consumers) or peaks in the feed does not immediately cause turn on of additional consumer
- Minimum on time. Heat pumps may not be switched on and off permanently, washing machines should be able to complete a cycle.
- Switch off delay. Short consumption peaks or reduction of the generated energy does not immediately switch off a load.
- Switch off point. At which energy flow consumers are switched off again. In practice, this value is usually slightly on the purchase side.
- Inputs for blinding out consumers when these are not available, for example when boiler has reached maximum temperature.
- Control of heat pumps (SG-ready), battery chargers, inverters



### Cheap equipment costs ensure a short payback period:

**Save € 312 \* a year with the EFR4000IP by switching on at 200 days a year for an average 3 hours consumers with 4 kW in times you have a surplus of own energy.**

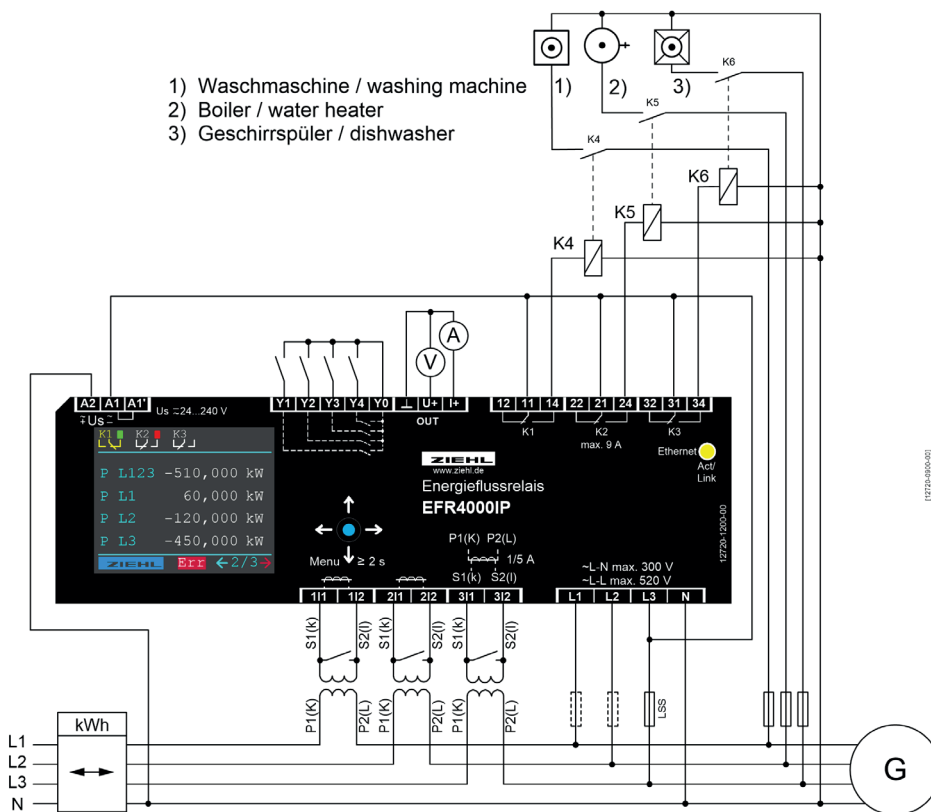
Equipment costs (EFR4000IP, 3x current transformer, if necessary contactors) are returned within about 2 years\*.

Longer / shorter switch on times and larger / smaller consumption shorten / extend the period. In addition, in the long term rising purchase prices for energy can be expected.

\* Feed 12 Ct / kWh, electricity purchase price 25 Ct / kWh

Features:

- Measuring of active power
- Counters for power (feed in and consumption) and switched on consumers (calculated)
- IP-conntection, integrated web-server
- Operation at device with color display (LCD) and joystick
- 3 inputs for customary current transformers with secondary 1 or 5 A. Ratio programmable
- 3 relay outputs
- 4 digital inputs Y1-Y4 for control signals
- Analog outputs for stepless regulation of a consumer. Zero adjustable 0-10 mA / 0-5 V for charging only when enough power is available
- Measuring transducer for power DC 0/2-10 V, 0/4-20 mA for active power up to ± 1000 kW, scaleable
- Housing 140 mm wide
- Zero Export Device and limiter. Switch off within <500 ms at inadmissible feed in that is contrary to contract



Technical Data

Rated supply voltage	DC/AC 24 – 240 V 0/50/60 Hz, <3 W, <9 VA DC 20,4 - 297 V AC 20 - 264 V
Relay outputs K1, K2, K3	3 x 1 change-over contact
Switching voltage	max. AC 300 V, DC 300 V
Conventional thermal current I <sub>th</sub>	max. 9 A
Switching power max cos φ=1	2000 VA
Contact service life, electr. cos φ=1	10 <sup>5</sup> operations at 300 V / 9 A
Rated operational current	AC-15 I <sub>e</sub> = 6 A U <sub>e</sub> = 250 V
Measurement of voltage (RMS)	L1 / L2 / L3 towards N
Voltage phase-N	AC 40,0 ... 330,0 V, 50/60 Hz
Max. error of measurement	± 0,5% of fullscale, ±1 digit
Measurement of current	Primary current max. 1.000 A
Nominal currents / resolution	AC 1/5 A / 1 mA
Max. error of measurement	± 0,5% of fullscale ±1 digit
Overload capacity	8 A continuously, 25 A max. 1 s
Resistance of input	25 mΩ
Measurement of active power	± 1.000 kW, resolution 1 W
Max. error of measurement	± 1 % of fullscale ±1 digit
Analog outputs (GND (⊥), I+, U+)	DC 0/4/1-10...20 mA, DC 0/2/0-5...10 V
Max. error	± 0,3 % of fullscale + error of measurement active power
Temperature factor	< 0,015 % / K
Load	≤ 500 Ω
Test conditions	see "general technical information"
Operating temperature	-20 °C ... +55 °C
Dimensions (B x H x T)	140 x 90 x 58 mm, mounting height 55 mm
Protection housing/terminals	IP 30 / IP20
Attachment	on 35 mm DIN rail or with screws M4
Weight	app. 300 g