

Monitoring of power consumption on 3-phase motors etc.

Metering voltages 3 x 380 V to 3 x 460 VAC

Built-in current transformer for direct monitoring up to 80 A

Selectable metering ranges from 0,1 kW to 70 kW

Analogue outputs and pulse output for kWh

Selectable divider and average function

Made in accordance with the CE and EMC regulations



C-mac® FPA90 is monitoring the consumed power on symmetrical 3-phase loads like motors, etc.

The power monitoring uses the formula

$$P = \sqrt{3} \times U \times I \times \cos \varphi$$

The unit has a built-in current transformer, making it possible to monitor loads up to 460 VAC - 80 A direct.

The converter is connected to the same 3-phase supply voltage as the load, and one of the phases are let through the hole in the unit, for monitoring of the load current.

If the load current exceeds 80 A, you can use an external current transformer, and the secondary from the transformer is then let through the hole.

The wanted metering range (in kW) is adjusted on 3 rotary switches on the front of the unit. If you use an external current transformer, you must divide the power setting with the ratio of the transformer.

In order to ensure the correct function it is important to connect the converter as shown on the next page, i.e. the metering current must be the phase, which is connected to terminal 1, and the current direction must be correct too.

The converter is supplied with analogue current and voltage outputs and a pulse output, and the outputs are in maximum, when the monitored power is the same as the selected metering range.

All outputs are galvanically separated from the supply voltage.

In addition the unit has 3 digital inputs for the selection of analogue output signal, pulse ratio and input filter.

The input filter is used if the load is very unstable, in this way, the output signal is more stable.

The unit is also supplied with 3 LED indications.

Technical data:

Supply voltage: 3 x 380 - 3x460 VAC +/- 10%

Frequency: 45-65 Hz

Power consumption: 4 VA

Operation temp.: -20°C to +60°C

Humidity: 0-90%, non-condensing

Metering ranges: Selectable 0,1 to 70,0 kW

Metering current: 0-80 A continuously
500 A short-term (10 sec.)
Max. diameter, cable: 10 mm

Accuracy: 2 %

Outputs, analogue:

Current: 0(4)-20 mA, max load 300Ω

Voltage: 0(2)-10 V, min load 10 kΩ

Output, pulses:

Transistor output,
max load 36 V / 25 mA

Frequency: 0-100/300 pulses/hour

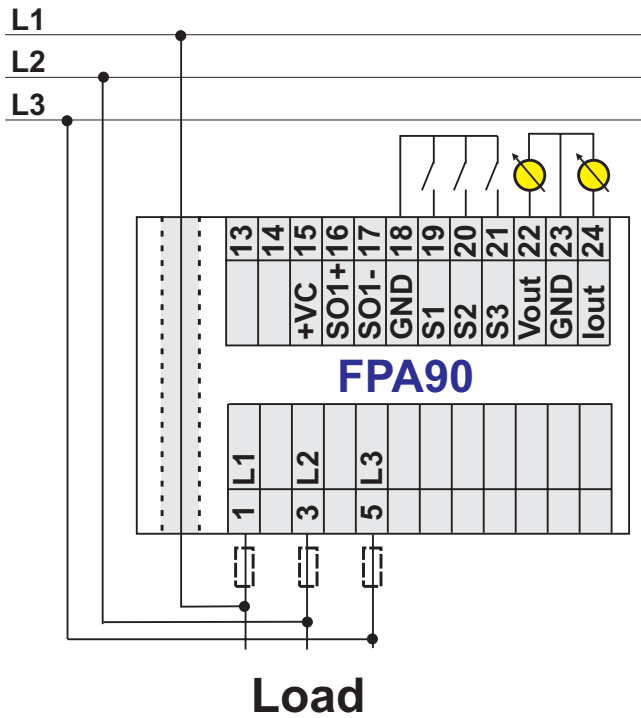
Pulse width: 200 msec.

Indications:

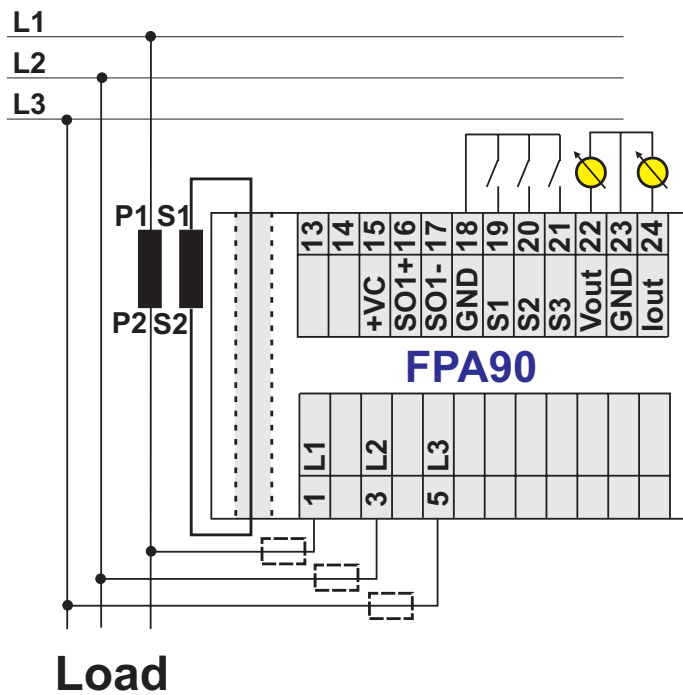
Green LED, On: Supply voltage OK
Red LED, Load: Metering current >3% of metering range

Red LED, kWh: Power consumption, follows the pulse output, but 10 times faster (max. 1000/3000 pulses /h)

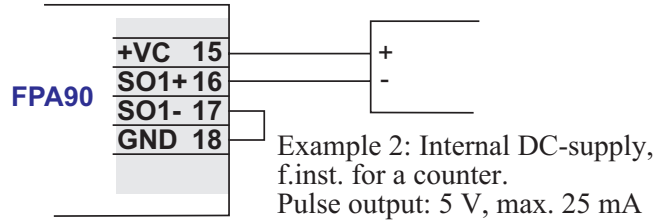
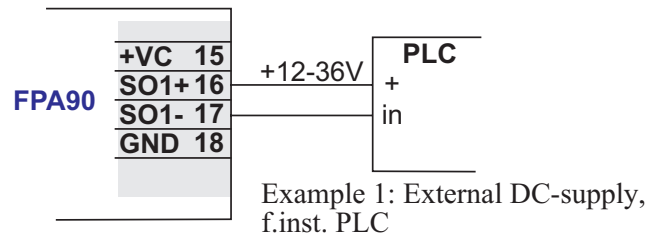
Connection diagram, direct current monitoring:



Connection diagram, current monitoring via current transformer:



Connection examples, pulse output:



Function selection, digital inputs:

S1, pulse output	100 pulses/h/FS	off
	300 pulses/h/FS	on
S2, noise filter	Filter x 1	off
	Filter x 16	on
S3, analogue output	4-20 mA / 2-10 V	off
	0-20 mA / 0-10 V	on

If the pulse output is used for summing of the power consumption, you can get an equal number of pulses per kWh by selecting the metering ranges as shown in the table below

	Range kW	3	10	30	100
S1 off	pulses/kWh		10		1
S1 on	pulses/kWh	100		10	

Mechanical dimensions:

86 x 70 x 58 mm, for mounting on DIN-rail

Ordering guide:

FPA94-400