

Power guard for 1- and 3-phase motors

Power metering ($U \times I \times \cos \varphi$)

Adjustable time-delay 0-20 sek. at start-up

Adjustable reaction delay 0,3-10 sek

Metering output indicates the power consumption

1-pole relay output 8 A / 250 VAC

Produced in accordance with **CE** and EMC regulations



C-mac[®] module type RP90 is used for power monitoring of 1-phase and symmetrical 3-phase loads, f.inst. motors. RP90 can be connected directly to loads with nominal current consumption up to 6 A; If the current is bigger, a standard current transformer is used.

The unit is supplied with an adjustable start-up delay, which ensures that the output relay is activated independent of the load, when the motor is started. RP 90 is supplied for both over- and underload monitoring.

The module is monitoring the total power consumption ($U \times I \times \cos \varphi$) which gives a much higher sensitivity than it is possible with the RP81.

The setpoint is coarse adjusted on a 10-position switch, and fine-adjusted on a potentiometer in front of the unit, which gives a very high sensitivity on the adjustment function.

When the setpoint is reached, an adjustable time-delay on 0,3 to 10 seconds starts. After this period, the relay releases, on the condition that the load has been passed the setpoint in the whole period, in this way it is ensured, that the relay will not release in case of short changes in the power consumption.

In order to get the most accurate setpoint adjustment, especially when very small loads are monitored, the unit is supplied for 4 different current ranges, and all units are available with inverted function, to detect underloads.

Technical data:

Supply voltage: 127 V + N or 3 x 230 V +/- 10%
230 V + N or 3 x 400 V +/- 10%
240 V + N or 3 x 415 V +/- 10%

Supply frequency: 40-70 Hz

Power consumption: 2,5 VA

Operation temp.: -20°C to +60°C

Humidity: 0 - 90% RH, non-condensing

Metering ranges:

Current range	max. load at supply voltage:			
	230V	400 V	415 V	int. shunt
01: max. 0,6 A	270 W	450 W	480 W	1,200 Ω
02: max. 1,2 A	540 W	900 W	960 W	0,150 Ω
03: max. 2,4 A	1100 W	1800 W	2000 W	0,068 Ω
04: max. 6,0 A	2700 W	4500 W	4800 W	0,033 Ω

Hysteresis: 1,3% of the total metering range

Latch:

pin 8-7.

If pins 8 and 7 is connected, and the relay releases, it will remain released, no matter if the load changes, until the connection is opened, or the supply voltage is disconnected.

Adjustments:

Start-up delay: Potentiometer, 0-20 sec.
Level, coarse: 10-position switch on the top of the unit.
Level, fine: Potentiometer, scale 0-10
Reaction delay: Potentiometer, 0,3-10 sec

Accuracy, scale:

5%

Indications:

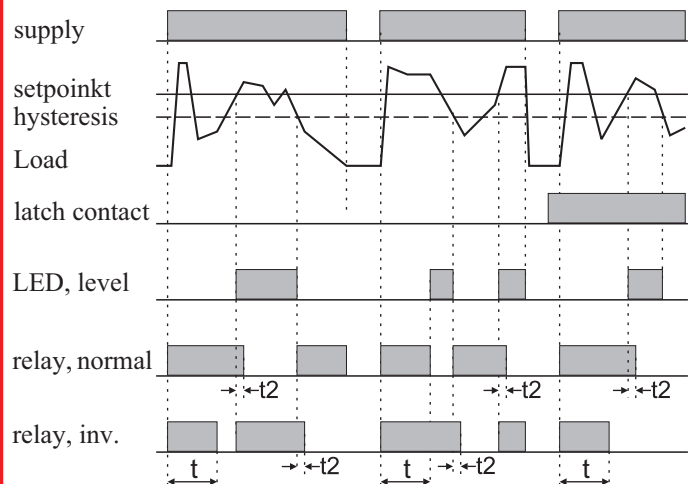
Green LED: Supply voltage connected
Yellow LED: Relay activated
Red LED: Setpoint exceeded.

Start-up:

start contact, pins 6-7.

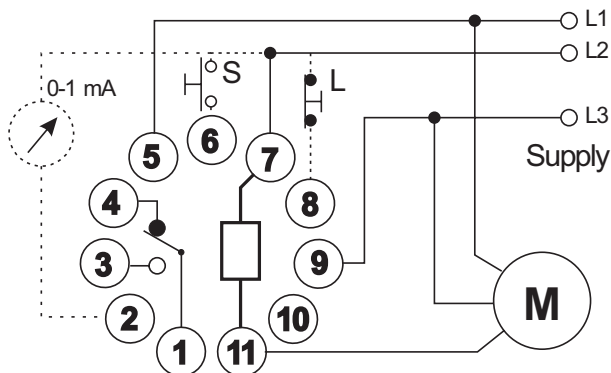
If pins 6 and 7 is connected, the relay and the start-up delay is activated, when the supply voltage is connected. This principle is used, if the unit is connected in parallel with the load. If the unit is constantly connected to the supply voltage, the start delay (and the metering) can be separately activated by connecting pins 6 and 7, f.inst. with a spare contact in the motorswitch.

Functional diagram:

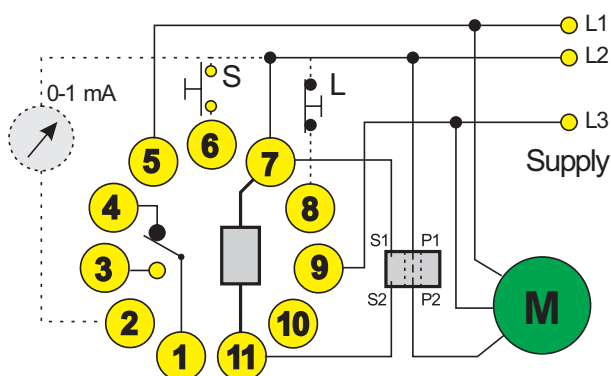


t = selected start-up delay, t2 = reaction delay

Connections:

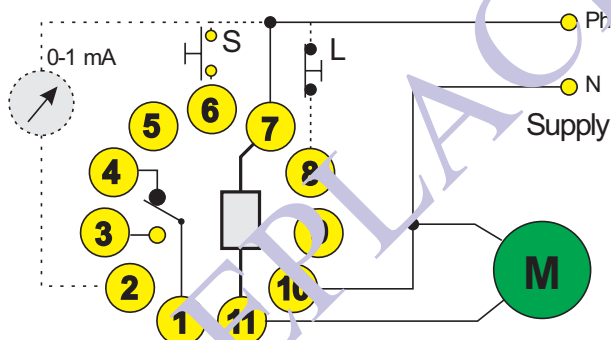


Example 1: 3-phase without current transformer.
(load current smaller than 6 A)



Example 2: 3-phase with current transformer
(load current bigger than 6 A)

Note: the current transformer must be connected as shown
(P1 / P2 and S1 / S2)



Example 3: 1-phase without current transformer.
(load current smaller than 6 A)

Adjustment of RP90, see next page.

Ordering guide:

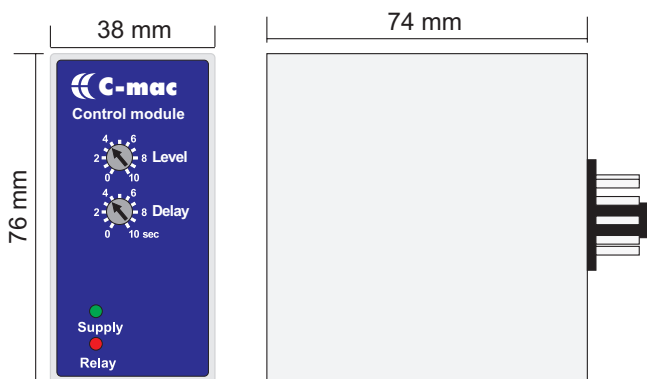
Supply	Type nr.
3 x 230 V	RP90-1-3-230-xy
3 x 400 V	RP90-1-3-400-xy
3 x 415 V	RP90-1-3-415-xy
x = function:	0 = normal (overload) 1 = inverted (underload) 2 = autostart **
y = current range:	1 = max. 0,6 A 2 = max. 1,2 A 3 = max. 2,4 A 4 = max. 6,0 A

ex: RP90-1-3-400-14

** Description autostart function:

The relay activates when the supply voltage is connected.
When pins 6 and 7 are connected, the start-up time is activated,
and remains activated during start-up (overload only).

Mechanical dimensions:



Materials and weight:

Housing:	NORYL-SE-1, grey, self-extinguishing
Housing bottom:	NORYL SE-1, GFN-2, black, self-extinguishing
Terminals:	Nickel-plated brass
Weight:	110 g