

# Zelio Control - measurement and control relays

Phase asymmetry control relays,  
self-powered, model RM 84 873

- Control:
  - phase imbalance (asymmetry),
  - phase sequence,
  - disconnection of one or more phases with regenerated voltage equivalent to 95 % of  $U_n$ .
  - Asymmetry rate adjustable on front panel (5 % to 20 %).
  - 3-phase power supply:
    - 3 x ~ 230 V and 3 x 400 V ~.
  - Dual frequency : 50 and 60 Hz.
  - Indication of phase presence and relay state by 2 LEDs.
  - Time delay in the event of a fault adjustable from 0.5 to 10 seconds.
  - Relay output:
    - 1 C/O contact, 8 A,
    - 2 C/O contacts, 8 A,

## Operating principle

The device is self-powered by two phases.

A green LED indicates that the power supply is ON.

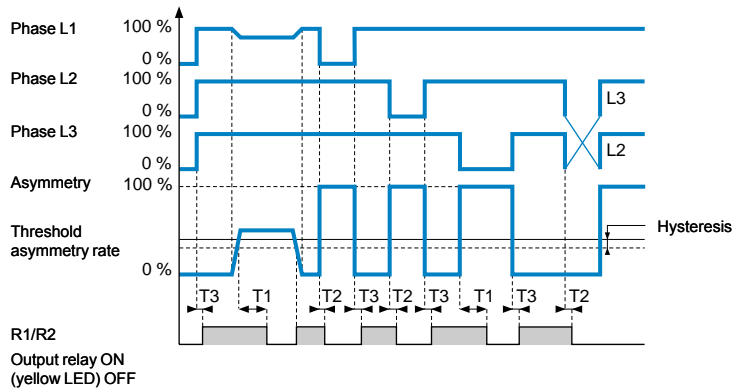
When the phase sequence is correct and the asymmetry rate is lower than the threshold indicated on the front panel, the output relay is energised; this is indicated by a yellow LED (lit).

The output relay de-energises after a delay T1, adjustable on the front panel, if one of the following faults is present:

- incorrect phase sequence,
- absence of L3,
- asymmetry rate higher than the threshold setting. This imbalance represents the increase or decrease in the voltage of two phases compared to the voltage of a different phase.

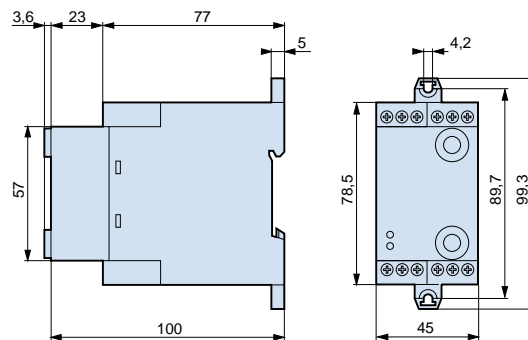
The output relay de-energises instantaneously in the event of a break on L1 or L2. A hysteresis fixed at about 10 % ensures bounce-free relay switching around the threshold.

As differential measurement is used, the relay does not react to symmetrical increases or decreases in the mains supply.



- T1: Delay after a fault
- T2: Delay on power-down
- T3: Delay on power-up.

## Dimensions



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## References



RM 84 873 300

### Phase asymmetry control relays, self-powered

Number of relays	Supply voltages measured	Reference	Weight kg
1	3 x ~ 230 V	RM 84 873 300	0.360
	3 x ~ 400 V	RM 84 873 301	0.360
2	3 x ~ 230 V	RM 84 873 310	0.360
	3 x ~ 400 V	RM 84 873 311	0.360

## Auxiliary power supply characteristics

Auxiliary voltage (self-powered from terminals L1-L2)	V	~ 230, ~ 400	
Operating range		0.8...1.2 x Un	
Frequency	Hz	50-60	
Maximum consumption	VA	4 at Un, 8 at Un + 20 %	
Immunity to microbreaks	ms	10	
Delay on power-up	t3	1 max	
Delay on power-down	t2	300 max	
Creepage distance and clearance	Conforming to IEC 60664-1	kV	4kV/3

## Input characteristics

3-phase supply	Rated voltage	V	3 x ~ 230, 3 x ~ 400
	Operating range	V	~ 185...275, ~ 320...480
Frequency (can be altered via switch beneath the device)	Hz	50-60	
Regeneration rate		max 95 % of Un	
Asymmetry rate adjustment		5...20 % of Un	
Threshold setting accuracy	Conforming to VDE 0435		± 20 % at full scale
Temperature drift		0.1 %/ °C	
Repeat accuracy		± 1 % at full scale	
Fixed hysteresis		10 % of the threshold setting	

## Output characteristics

Output type		Volt-free C/O contact, AgCdO
Breaking capacity		~ 2000 VA, --- 80 W
Maximum breaking current	V	~/--- 8
Minimum breaking current	mA	~/--- 100
Maximum switching voltage	V	~/--- 250
Electrical life	AC-12	2000 VA - 10 <sup>5</sup> operating cycles
	AC-15	Cos φ = 0.3 - 6000 operating cycles
	DC-13	L/R = 300 ms - 6000 operating cycles
Mechanical life		5 x 10 <sup>6</sup> operating cycles

## Other characteristics

Time delay in the event of fault t1 :	s	0.5...10, Max : 10...16	
Indication	Supply	Green LED	
	Relay	Yellow LED	
Protection class	Terminal block	IP 20	
	Enclosure	IP 30	
Enclosure		Self-extinguishing PC, panel or DIN rail mounted	
Terminal block clamping capacity	Without cable end	mm <sup>2</sup>	2 x 2.5
	With cable end	mm <sup>2</sup>	2 x 1.5
	Tightening torque	Nm	0.6 max (M3 screw/IEC 947-1)
Temperature limits	Operation	°C	- 20...+ 60 (conforming to IEC 68-2-14)
	Storage	°C	- 30...+ 70 (conforming to IEC 68-2-1/2)
Relative humidity	Conforming to IEC 68-2-30		93 % without condensation
Vibrations (conforming to IEC 68-2-6)	Amplitude	mm	0.35
	Frequency	Hz	10...55
Insulation resistance	Conforming to IEC 255-5	mΩ	> 100 at c 500 V
Dielectric strength	Conforming to IEC 255-5	kV	2.5/1 min/1 mA/50 Hz
Impulse voltage	Conforming to IEC 255-5/664-1	kV	5/wave 1.2 - 50 μs
Product certifications			c UL us, CSA, RM 84 873 30● : GL