

THREE-PHASE POWER CONTROLLER RP3 TYPE



APPLICATION

The RP3 power controller is a contactless three-phase power energy electronic device which includes a thyristor connector and an electronic gate triggering system. (GTS). This power controller allows the control of the power delivered from a three-phase voltage source to an electrical energy load in function of the control signal input. The RP3 power controller is destined for three-phase actuators with resistance or resistance-inductance loads in control systems and automatic temperature control.

The application area of RP3 power controllers comprises:

- electrical furnaces and drying constructions, particularly industrial tunnels and belt-type furnaces, furnaces for annealing and hard soldering, crucible furnaces and smelters, furnaces for hardening in salt baths.
- devices of mechanical engineering, aggregates and extruding presses for plastics, devices, for winding and tempering of springs, spot welding and seam welders,
- production of glass and glazing, installations and devices for drying in infrared and ultraviolet radiation, ladles for glass melt and heating of feeding devices, furnaces for glass forming.
- chemical and petroleum industries, facing heaters of tube installations, pre-heating installations.

KINDS OF CONTROL

On-off control.

Chopper control:

- fast cycle - $f_{i,max} \approx 1$ Hz,
- slow cycle - $f_{i,max} \approx 0.1$ Hz.

Phase control.

ADDITIONAL FUNCTIONS

- Load current limitation
- Delay of soft start tripping type
- Control of the initial gating angle value
- Control of the input line amplification
- Supervising and signaling of the current in the load circuit, output $U = f(I_o)$
- Supervising of the radiator temperature
- Signalling of the fuse damage
- Signalling of the incorrect phase sequence
- Signalling of overload
- Relay outputs

TECHNICAL DATA

Electrical parameters of the strong-current circuit

Max. output current	Supply voltage of the load circuit	Max. power of the load	Lost power in thyristors	Fuse parameters	
				$\int i^2 dt$ at 415 V	Marking / manufacturer
40 A	3-400 V/50 Hz	30 kW	< 200 W	440 [A ² s]	50 A 50FE - Bussmann 6.9 gRB 000 BS 88/50 - FERRAZ
70 A	3-400 V/50 Hz	53 kW	< 350 W	3600 [A ² s]	100 A 100FE - Bussmann 6.9 URB 000 BS 88/100 - FERRAZ
125 A	3-400 V/50 Hz	95 kW	< 600 W	9600 [A ² s]	160 (200) A 200FEE - Bussmann 6.9 URB 000 BS 88/160 - FERRAZ
200 A	3-400 V/50 Hz	152 kW	< 950 W	28500 [A ² s]	250 A 250FM - Bussmann 6.9 URC 000 BS 88Z/250 - FERRAZ
300 A	3-400 V/50 Hz	229 kW	< 1500 W	68500 [A ² s]	350 A 350FMM - Bussmann 6.9 URC 000 BS 88Z/355 - FERRAZ
450 A	3-400 V/50 Hz	343 kW	< 2200 W	180000 [A ² s]	500 A 500FMM - Bussmann 6.9 URC2.000 BS 88Z/500 - FERRAZ

Minimal load

1% of the output current range
 I_N of the controller

Leakage current in the thyristor circuit

< 20 mA

Kind of load

resistance or resistance-inductance acc. to EN 60947-4-2 and EN 60947-4-3

Electrical parameters of the supply and control circuit:

- supply voltage U_{WB} 195...230...253 V a.c.
- supply voltage frequency 50 Hz
- power consumption ≤ 8 VA
- voltage control input 0...5 V $R_{in} = 20$ k Ω
- 0...10 V $R_{in} = 40$ k Ω
- current control input 0(4)...20 mA $R_{in} = 125$ Ω
- impulse control input 0/4...32 V $R_{in} = 20$ k Ω
- input of the STOP signal 4...32 V/5 mA
- load capacity of the 5 V output 25 mA
- load capacity of the I_o output 5 mA/5 V
- load capacity of relay outputs 60 mA/350 V, $R_{on} = 35$ Ω ,
 $U_{izol} = 1500$ V_{RMS}

Other parameters:

- working temperature 0... 40°C
- storage temperature -25... 55°C
- humidity < 90%, condensation inadmissible
- working position vertical
- dimensions:
 - 40 A, 70 A, 125 A versions 212 × 318 × 177 mm
 - 200 A, 300 A, 450 A versions 383 × 433 × 281 mm
- weight:
 - 40 A, 70 A, 125 A versions 8.5 kg
 - 200 A, 300 A, 450 A versions 37 kg

Safety requirements:

- maximal phase-to-earth working voltage 320 V for power and supply circuits, 50 V for other circuits
- pollution degree 2
- installation category III
- protection degree from terminal side IP 00 acc. to EN 60529
- protection degree by the housing IP 20 acc. to EN 60529

Electromagnetic compatibility:

- immunity EN 60947-4-2 and EN 60947-4-3
- emission EN 60947-4-2 and EN 60947-4-3

The RP3 power controller fulfils requirements of EN 60947-4-2 and 60947-4-3 standards.

NOTE: in case of phase control, the power controller fulfils requirements of electromagnetic compatibility in respect of noise emissions only when working near the transition of the supply voltage through zero.

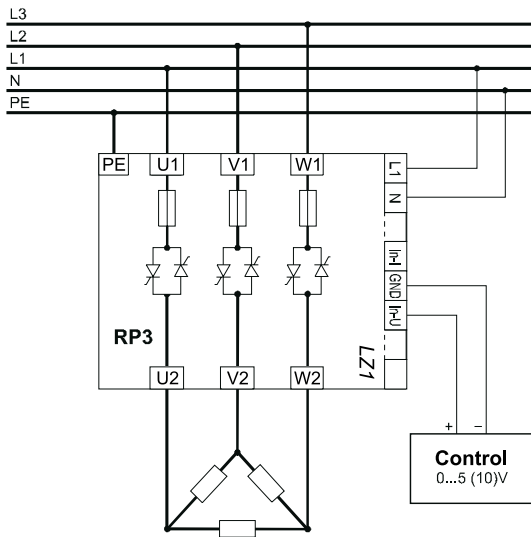
ORDER CODES

POWER CONTROLLER		X	X
Current range:			
maximal output current	40 A	<i>napięcie odbiornika:</i> 3 ~ 400 V a.c. 50 Hz	1
maximal output current	70 A		2
maximal output current	125 A		3
maximal output current	200 A		4
maximal output current	300 A		5
maximal output current	450 A		6
Acceptance tests:			
Without an extra quality inspection certificate		8	
With an extra quality inspection certificate		7	
Other requirements.....		X	

ELECTRICAL CONNECTIONS OF EXTERNAL CIRCUITS

Load connection

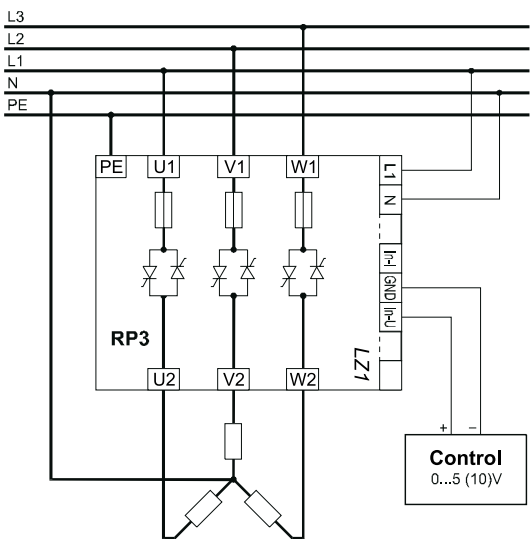
a) supply: 3~400 V, 3-wire load



Electrical connections must be carried out with following wires (rails):

- a) to the terminal strip - wires with cross-section from 0.35 to 2.5 mm²,
- b) to strong-current terminals:
 - RP3-1x version; 40 A, - wires of cross-section min. 16 mm²,
 - RP3-2x version; 70 A, - wires of cross-section min. 25 mm²,
 - RP3-3x version; 125 A, - wires of cross-section min. 50 mm²,
 - RP3-4x version; 200 A, - rail of cross-section min. 100 mm²,
 - RP3-5x version; 300 A, - rail of cross-section min. 200 mm²,
 - RP3-6x version; 450 A, - rail of cross-section min. 300 mm².
- c) to the protection terminal - wire (rail) of cross-section at least the same as wires in the strong current circuit.

b) supply 3 ~ 400 V, 4-wire load



c) supply 3 ~ 400 V, 6-wire load

