



ul. Konstytucyjna 79/81  
95-200 Pabianice  
tel/fax 48 42 2270971 POLAND  
e-mail: fif@fif.com.pl

## PF-451 AUTOMATIC PHASE SWITCHES



www.fif.com.pl

F&F products are covered by an 24 months warranty from date of purchase

### PURPOSE

Automatic phase switches serve to maintain continuity of power supply to single-phase receivers in the event of power phase decay or a drop in its parameters below standard values.

### FUNCTIONING

The directly connected switch is used for supplying the single-phase circuit whose current-load does not exceed 16A. For the circuits that have a current-load higher than 16A, a configuration is used that consists of a switch and three contactors that have a properly selected current-carrying capacity. Three-phase voltage (3x230V+N) is supplied to the input of the switch (L1, L2, L3, N). Single-phase voltage (230V AC), i.e. the phase voltage of one of the phases, is directed to the output of the switch (T1, T2, T3). The electronic system of the switch controls voltage values of the phases supplied. The phase that has correct parameters is switched to the output of the switch.

4. Take ON the power and check a continuity of power supply connected to one phase configuration by successive switching OFF the voltage in phases L1, L2, next L3.

### TECHNICAL DATA

supply	3x400V+N
output	230V AC
current load	
without contactors	<16A
within contactors up to max. capacity of the contacts	
voltage activation threshold	
lower	170+210V
upper	230+260V
hysteresis	5V
power supply indicator	green LED
switching time	0,5+0,8sec
signalization of phase selection	3x yellow LED
working temperature	-25+50°C
connection	screw terminals 2,5mm <sup>2</sup>
dimensions	5 modules (88mm)
fixing	on rail TH-35

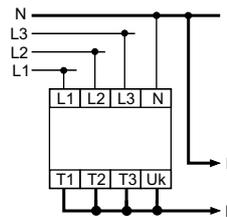
Phase switching sequence is not specified the phase that has the best parameters is always switched to the output. Switching to another phase that has correct parameters occurs only after a drop in values of parameters of the currently used phase. The switch-over time (required for voltage to occur at the output) after the decay of a currently activated phase is from 0.5 to 0.8 sec. (during this time the receivers are not supplied). Uk input is used for controlling the voltages activated. The system enables the activation of only one phase. In this way the simultaneous switching of voltages of two phases to the output is prevented. Such simultaneous switching of voltages might lead to a phase-to-phase fault. Also, the defect of the contactor (for example, a break in the coil circuit, suspending or burning out of the working contactor) will cause the switching of the receiver to another phase despite the fact that the voltage in a given phase is correct. If the contacts of the contactor are permanently closed, the system will not switch to another contactor despite the fact that the voltage in this phase is incorrect. After the activation of supply voltage (at least one phase), the system examines the correctness of voltages supplied for 2 seconds and only after that time the system switches the phase to the output. The switch provides the option of adjusting a lower voltage threshold (150V to 210V) and an upper voltage threshold (230V to 260V) at which switching-over occurs.

### ASSEMBLY

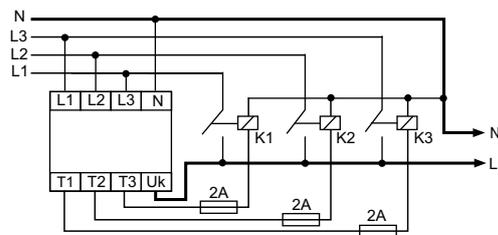
1. Take OFF the power.
2. Connect inputs voltage to joints L1, L2, L3, and N.
3. Output:
  - a) with direct configuration (<16A)- close all outputs T1, T2, T3 and input Uk, (phases will be connected by within contactor of relay). That configuration move to supply of receiver.
  - b) for configuration with contactors (>16A)- from outputs T1, T2, T3 move a supply to coil of contactors. Outputs of track of main contactors close with oneself and connect to input Uk. That configuration move to supply of receiver.

### WIRING DIAGRAM

direct configuration of connection



with contactors



A090619