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PF-421 TRMS

Automatic phase switch with the adjustable lower and upper voltage threshold

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Do not dispose of this device in the trash along with other waste!
According to the Law on Waste, electro coming from households free of charge and can give any amount to up to that end point of collection, as well as to store the occasion of the purchase of new equipment (in accordance with the principle of old-for-new, regardless of brand). Electro thrown in the trash or abandoned in nature, pose a threat to the environment and human health.

CE

Purpose

The PF-421 automatic phase switch is used to maintain the continuity of the power supply of a single-phase receiver in case of phase failure or when the phase exceeds preset parameters. The compact size of the device allows you to save space in the electrical cabinet.

By measuring the RMS value of the voltage (True RMS), the switch guarantees the correct operation even when operating with a severely disturbed power supply network.

Functioning

A three-phase voltage (3×230 V+N) is connected to the input terminals of the device. A single-phase voltage (230 V) of one of the phases appears at the output of the relay. The electronic circuit of the switch controls the voltage values of the supplied phases so that the output voltage is not lower or higher than the set values. The phase with the correct parameters is directed to the output Switch. The device measures the RMS value (True RMS) of the voltage, so it is perfect for modern automation systems, where the supply voltage is often distorted due to the operation of nearby devices with pulse power supplies. The corresponding green LED light indicates that the phase is connected to the output of the switch. Depending on the set mode of operation, phase L1 is the priority phase, or the system operates without phase priority (Tret set to ∞).

Operating with the priority phase

In this mode, the L1 phase is the priority phase and if its parameters are correct for the time set by the Tret knob, it will be connected to the output. If the L1 phase exceeds the upper or lower settings level (its voltage value will be incorrect), then the voltage of the L2 phase (if it has the correct parameters) will be connected to the output, or the L3 phase, if the L2 phase was also incorrect. If phase L3 is connected to the output and phase L2 returns to the correct parameters, and will be correct for the time set by the Tret knob, then it will be switched to the output (priority of phases from highest to lowest is L1, L2, L3). If the output phase voltage is 10 V below the set value or 10 V above it, the switchover will occur with a 10-second delay. If the phase value goes beyond this range, it will be disconnected immediately (about 200 ms).

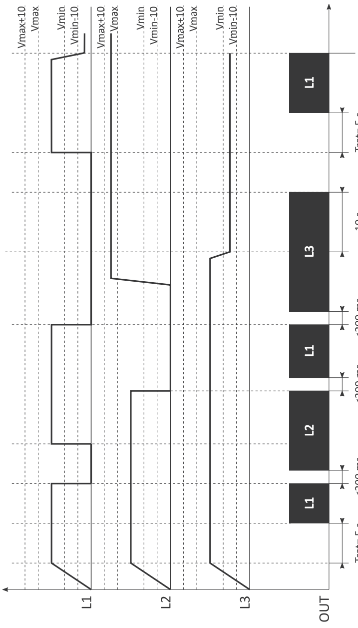
Operating without the priority phase (Tret set tos ∞).

In this mode, all phases have the same priority, which means that the first of the correct phases will be connected to the output (when the power is switched on, the check starts from phase L1). The output phase will be changed only when the voltage at the output exceeds the range set by the Vmin and Vmax knobs.

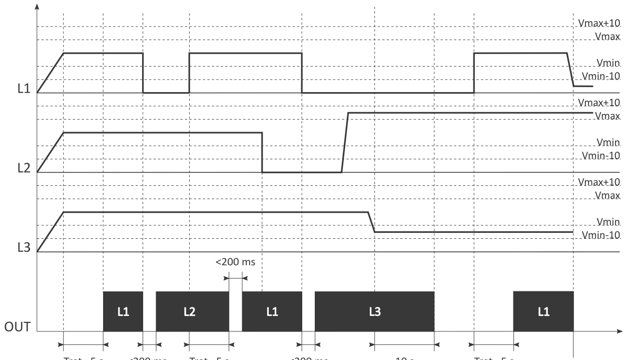
If the output phase voltage is 10 V below the set value or 10 V above it, the switchover will occur with a 10-second delay. If the phase value goes beyond this range, it will be disconnected immediately (about 200 ms).
In both cases, when the voltage of either phase is not in the correct range, the output load is disconnected. Switching the output to a phase with incorrect parameters is not possible.
The operating voltage range for all three phases is set using the Vmax and Vmin knobs. The Vmax knob determines the maximum allowable output voltage, while Vmin determines the minimum voltage. If the phase voltage value is between the Vmin and Vmax thresholds, it is considered normal.

Incorrect connection of the input wires (N connected in the wrong place) will switch the leads at the output, which means that in the place where the N potential should appear the phase voltage connected to the N input terminal will appear. The N potential will appear where the potential of the selected phase should appear. If the voltage of the phase connected to the N terminal is incorrect, the output will be completely disconnected, but the potential of the incorrectly connected phase will still be present at the output!

Time courses

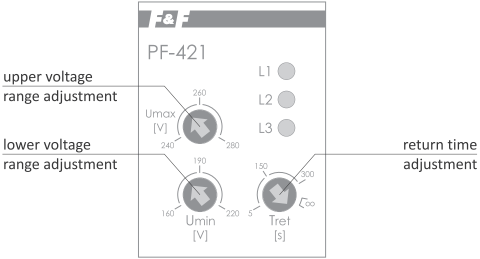


Without the priority phase



With the priority phase

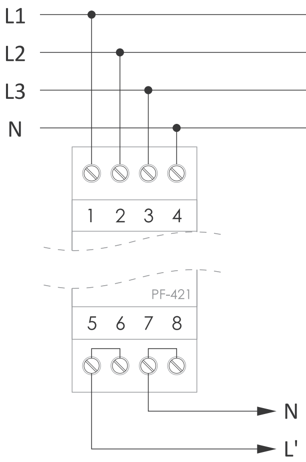
Front description



Mounting

1. Turn off the power supply.
2. Connect the input voltages to terminals 1, 2, 3 and the neutral wire to terminal 4.
3. Connect the powered single-phase circuit to terminal 5 or 6 (phase) and 7 or 8 (neutral wire).
4. Turn on the power supply and check the continuity of the power supply to the connected single-phase circuit by successively turning off the voltage in phases L1 and then L2.

Wiring diagram



1	power supply input – phase L1
2	power supply input – phase L2
3	power supply input – phase L3
4	power supply input – neutral wire
5/6	power supply output – phase L’
7/8	power supply output – neutral wire

Outputs 5-6 and 7-8 are connected in parallel, which means that the output signal is available on each output.

Technical data

power supply voltage	3×230 V+N
minimum operating voltage (with power from a single phase)	85 V
maximum phase voltage	420 V
frequency	45÷55 Hz
cooperation with power generators	no
maximum load current (AC-1)	16 A
mechanical strength of contacts	1×10^7
electrical strength of contacts (16 A/AC-1)	1×10^5
TrueRMS measurement	yes
sampling frequency of the signal	4 kHz
actuator	3× relay
return hysteresis	10 V
setting range Vmin	160÷220 V
setting range Vmax	240÷280 V
voltage measurement error	±1%
switching time	max 200 ms
return time	5÷300 s
indication of the output voltage	3×LED
power consumption	1.5 W
terminal	4.0 mm^2 screw terminals
tightening torque	0.5 Nm
working temperature	-25÷50°C
dimensions	2 modules (35 mm)
mounting	on TH-35 rail
ingress protection	IP20

Warranty

F&F products are covered by a 24-month warranty from the date of purchase. The warranty is only valid with proof of purchase. Contact your dealer or contact us directly.

CE declaration

F&F Filipowski sp. j. declares that the device is in conformity with the essential requirements of The Low Voltage Directive (LVD) 2014/35/EU and the Electromagnetic Compatibility (EMC) Directive 2014/30/UE.
The CE Declaration of Conformity, along with the references to the standards in relation to which conformity is declared, can be found www.fif.com.pl on the product subpage.

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