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zAMEL

DESCRIPTION

APM-10 Automatic phase switch is a device designed to maintain continuity of power supply to a single-phase load at the time of voltage fluctuation in the network. The device automatically selects the closest priority phase within the user-defined setting range and connects it to the single-phase load. The maximum load capacity of the output should not exceed 16A for loads in class AC1. APM-10 is designed for installations in switchgears (DIN-Rail). The housing has the width of 2 modules.

FEATURES

- Ensuring continuity of supply to a single-phase load,
- three-phase supply L1-L2-L3 (L1-priority phase),
- adjustment of the response threshold for maximum voltage,
- adjustment of the response threshold for minimum voltage,
- adjustment of the priority phase reset time,
- adjustment of the auto reset time,
- output load capacity - max. 16A for C1 loads,
- parameter signaling for individual supply phases - 3 x LEDs,
- fault indication,
- mounting in the switchgear (DIN-Rail).



NOTE

The device should be connected to a one-phase network in accordance with legally binding standards. The connection method is described in this manual. Any activities related to installation, connection, and adjustment should be performed by qualified electricians who have read this user's manual and familiarised themselves with device functions. Removing the enclosure voids the warranty and poses a risk of electric shock. Before installation, make sure that there is no voltage on connection cables. To install the device, use a cross-head screwdriver with a diameter of 3.5 mm. The proper operation of the device is affected by how the device is transported, stored, and used. It is not advisable to install the device in the following cases: lack of any components, damage to or deformation of the device. If the device operates improperly, please contact the manufacturer.



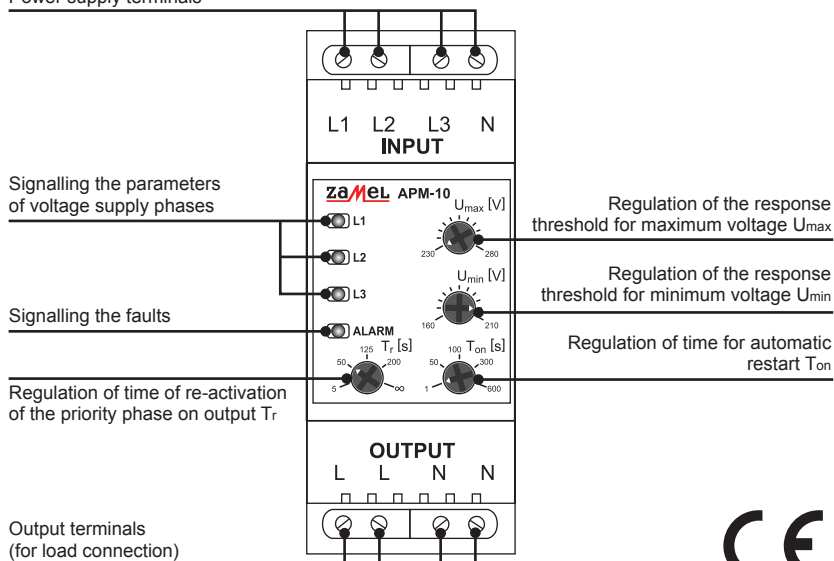
Do not dispose of this device together with other waste! To avoid harmful effects on the environment and human health, the worn-out device should be stored in designated areas. Electrical waste from households may be handed over to the waste collector established for this purpose free of charge and in any amount, as well as to the store when purchasing new equipment.

TECHNICAL DATA

Power supply terminals:	L1, L2, L3, N
Rated supply voltage:	3 x 230 V AC + N
Rated frequency:	45 ÷ 55 Hz
Response range at U _{min} :	160 ÷ 210 V
Response range at U _{max} :	230 ÷ 280 V
Priority phase output reclosing time range T _r *:	5 ÷ 200 s
Reclosing time adjustment range T _{on} :	1 ÷ 600 s
Fixed switching delay (disconnection) at U _{min} :	12 s
Backup phase switching time:	no longer than 0.2 s
Voltage hysteresis:	5 ÷ 6 V
Accuracy of determining response threshold at voltage change:	±3 V
Maximum commutated current (cos φ=1) of output contacts:	16 A
Maximum commutated current (cos φ=0.4) of output contacts:	5 A
Power consumption (under load):	not greater than 1,2 W
Number of connection terminals:	8
Cross section of connection wires:	0,5 ÷ 1,5 mm ²
Operating temperature:	-20 ÷ +45 °C
Working position:	free
Housing mounting:	DIN-Rail
Housing protection degree:	IP20
Overvoltage category:	II
Pollution degree:	2
Dimensions:	90,2x36x64,5
Weight:	0,15 kg

APPEARANCE

Power supply terminals



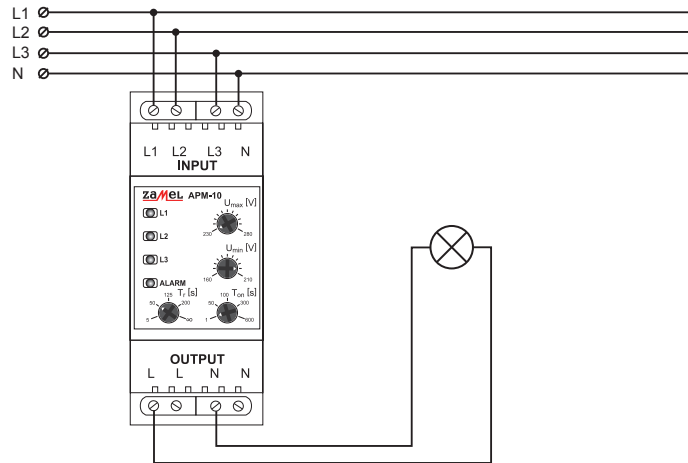
ASSEMBLY

1. Disconnect the power supply circuit with a fuse, an overcurrent circuit breaker or isolator switch-disconnector combined to the corresponding circuit.
2. Check voltage-free condition on supply conductors using proper measuring instrument.
3. Mount the APM-10 in the switchgear on the DIN-Rail rail
4. Connect the wires to the terminals in accordance with the wiring diagram.
5. Set the response thresholds of the device using the potentiometers: U_{max} , U_{min} , T_r i T_{on} .

NOTE! During operation, the values of U_{max} , U_{min} , T_r and T_{on} can be changed, provided that the safety rules are observed.

6. Switch on the power supply.
7. Check if the device operates properly.

CONNECTION



OPERATION

The APM-10 electronic phase switch is a microprocessor-based digital device. The user sets response thresholds for the minimum and maximum voltage values at which the phase switch activates and switches the reserve phase (disconnects the load). The lighting of one of the green LEDs L1, L2, L3 on the front panel indicates the phase to which the load is connected.

With the correct voltage on all phases (L1, L2, L3), the load will be connected to phase L1. If the voltage value on L1 exceeds the threshold, APM-10 will check the L2 phase and connect the load to it. If the voltage on L2 exceeds the response thresholds, the APM-10 will connect the load to the L3 phase. When the voltage on the reserve phases exceeds the set thresholds, the load is disconnected.

NOTE! Switching to a phase with incorrect parameters is not possible.

After switching to the reserve phase and restoring the correct voltage parameters on the priority phase, the load will be switched to the priority phase after the user-set recovery time.

NOTE! If the voltage on the priority phase exceeds the thresholds during the recovery time countdown, the timer will restart.

If T_r is set to „∞“, the priority phase is switched back to the output only if the voltage on the reserve phase exceeds the set thresholds.

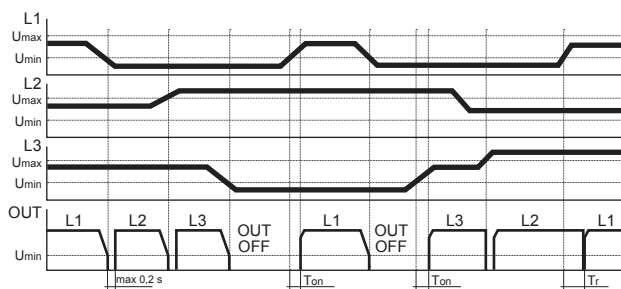
If the voltage applied to the load falls below the minimum allowable voltage, the load is switched on or off with a time delay of 12 seconds. If the voltage value rises above the maximum allowable voltage threshold or drops 30 V below the minimum allowable voltage threshold, the load is switched or disconnected with a time delay of 0.2 s.

When the load is disconnected, the APM-10 continues to monitor the voltage on all phases.

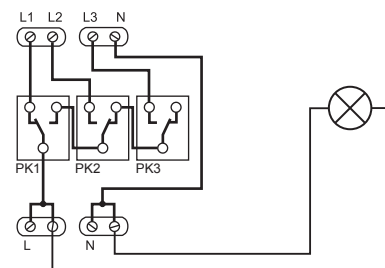
When the voltage on one of the phases is restored to acceptable parameters, the APM-10 will connect a load to that phase within the T_{on} timeout.

If the load is disconnected on all three phases, the „ALARM“ LED will light up. When the voltage on all three phases exceeds the preset response thresholds, the load will be disconnected and the „ALARM“ LED will light up. If several APM-10 phase switches are used in a network, it is recommended to select different phases for different groups of consumers as „priority“ in order to prevent overloading of the phases.

Timing chart:



Internal Circuitry



WARRANTY CARD

Manufacturer provides a 24-month warranty

1. ZAMEL Sp. z o.o. shall offer a 24-month warranty on the products sold.
2. The warranty provided by ZAMEL Sp. z o.o. shall not cover:
 - a) mechanical damage caused during transport, loading/unloading or in other circumstances,
 - b) damage caused by incorrect installation or operation of products manufactured by ZAMEL Sp. z o.o.,
 - c) damage resulting from any changes made by the BUYER or third parties in the products sold or equipment necessary for the proper operation of the products sold,
 - d) damage resulting from force majeure or other fortuitous events for which ZAMEL Sp. z o.o. is not liable.
3. Any warranty claims shall be made by the BUYER at the point of sale or to ZAMEL z o.o. in writing after defects have been identified.
4. ZAMEL Sp. z o.o. undertakes to handle complaints in accordance with the applicable provisions of Polish law.
5. The choice of the form of complain resolution, e.g. replacement of a product with a product free from defects, repair, or reimbursement of money, shall lie with ZAMEL Sp. z o.o.
6. The warranty does not exclude, limit, or suspend BUYER's rights under the statutory warranty for defects in the item sold.

Seller's stamp and signature, date of sale