



ZAMEL Sp. z o.o.

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# zAMEL

### DESCRIPTION

The automatic phase switch APM-20 is designed to ensure uninterrupted power supply of a one-phase receiver in case of phase loss or RMS voltage value decrease below the norm. The main advantage of the device is a small relative voltage measurement error, which does not exceed 1% even for highly distorted waves. The above is a result of an implementation of the True RMS converter. The APM-20 device is supplied by three phases L1, L2, L3 with the L1 phase as the prior one. The voltage switch threshold (180 V AC), switching time (150 ms) and voltage hysteresis (10 V AC) have default settings and cannot be changed by a user. Each phase parameters are optically signalled by means of LEDs on the front panel of the device. The internal system of output contacts assures an increased resistance to their bonding and protects against phase-to-phase short circuit. The maximum output capacity should not exceed 16 A for AC1 class receivers. APM-20 is mounted in distribution boards (TH35 rail). The casing has the width of 2 modules.

### FEATURES

- maintaining uninterrupted power supply of a single-phase receiver,
- three-phase power supply L1-L2-L3 (L1-priority phase),
- automatic phase switching during power supply failure or its value decrease below 180 V AC,
- switching time at a level of 150 ms
- voltage switch threshold, switching time and voltage hysteresis have default settings and cannot be changed by a user,
- high voltage measuring accuracy – relative error < 1%,
- voltage measurement of distorted signals (True RMS),
- output load– maximum 16 A for AC1 loads,
- signalling the parameters of particular voltage supply phases – 3 x LEDs,
- mounting in distribution boards (TH35 rail) – width of 2 modules.

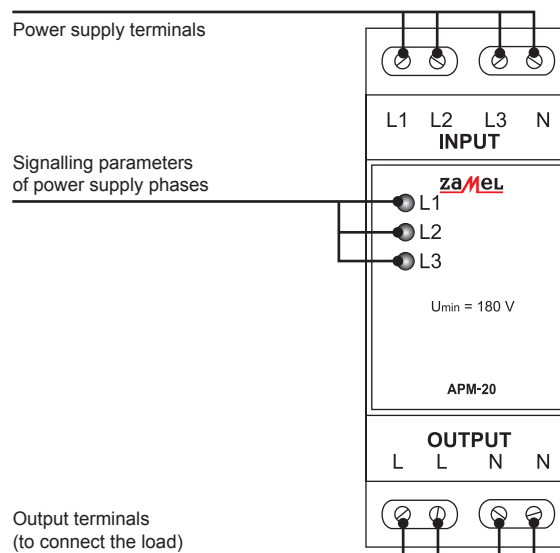


The symbol means selective collecting of electrical and electronic equipment. It is forbidden to put the used equipment together with other waste.

### TECHNICAL PARAMETERS

Power supply terminals:	L1, L2, L3, N
Nominal supply voltage:	3 x 230 V AC + N
Nominal frequency:	50 Hz
Nominal power consumption:	1,7 W / 3,8 VA – per 3 phases
Priority phase:	L1
Signalling parameters of power supply phases:	3 x red LED (L1, L2, L3)
Output terminals:	L, L, N, N
Nominal output voltage:	230 V AC
Maximum output capacity:	16 A for AC1 class devices
Switch threshold for L1, L2, L3:	<180 V AC
Voltage hysteresis:	10 V AC
Switching time:	~150 ms
Względny błąd pomiaru napięcia:	<1%
Distorted signal measurement:	yes – True RMS
Number of terminal clamps:	8
Cross-section of connecting cables:	0,2 do 2,5 mm <sup>2</sup>
Operating temperature range:	-20 ÷ +45 °C
Operating position:	free
Casing mounting:	TH35 rail (2-MOD casing)
Casing protection degree:	IP20
Protection level:	II
Overvoltage category:	II
Pollution degree:	2
Surge voltage:	1 kV (PN-EN 61000-4-5)
Dimensions:	monomodular 90x35x66 mm
Weight:	0,14 kg
Reference standard:	PN-EN 60669-1, PN-EN 60669-2-1, PN-EN 61000-4-2,3,4,5,6,11

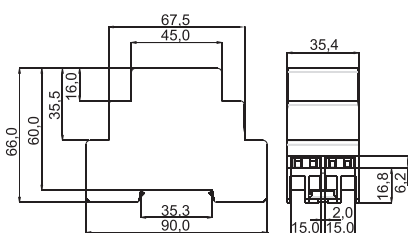
### APPEARANCE



## MOUNTING

1. Disconnect power supply by the phase fuse, the circuit-breaker or the switch-disconnector combined to the proper circuit.
2. Check if there is no voltage on connection cables by means of a special measure equipment.
3. Mount the APM-20 device on the TH35 rail.
4. Connect the cables with the terminals in accordance with the installing diagram.
5. Switch on the power supply from the mains.
6. Check if the device operates correctly.

## CASING DIMENSIONS



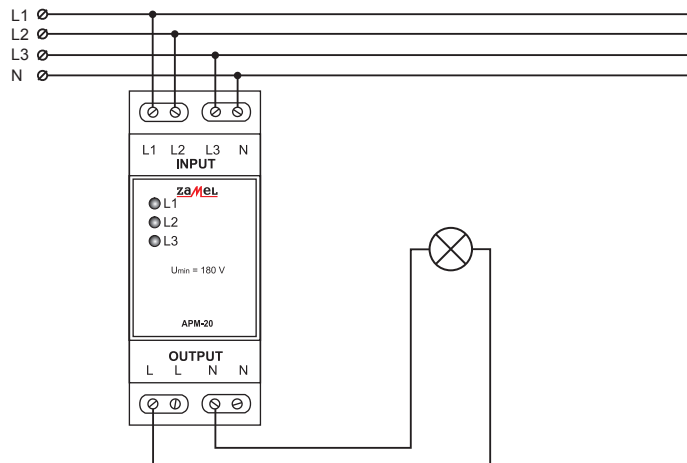
The device is designed for single-phase installation and must be installed in accordance with standards valid in a particular country. Installation, connection and control should be carried out by a qualified electrician staff, who act in accordance with the instruction manual and the device functions. In case of casing dismantling, the guarantee is lost and an electric shock may occur. Before installation make sure the connection cables are not under voltage. The cruciform head screwdriver 3,5 mm should be used to install the device. Improper transport, storage, and use of the device influence its wrong functioning. It is not advisable to install the device in the following cases: if any device part is missing or the device is damaged or deformed. In case of improper functioning of the device contact the producer.

## WARRANTY CARD

There is a 24-month warranty on the product

Salesman stamp and signature, date of sale

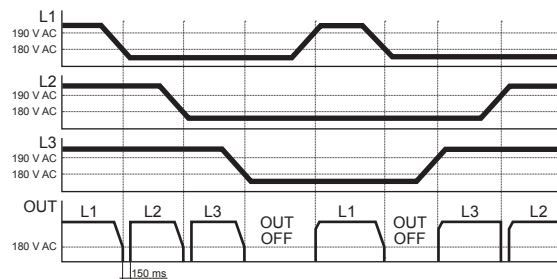
## CONNECTION



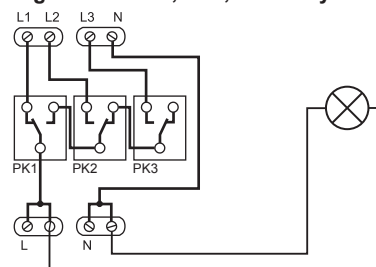
## FUNCTIONING

After power supply is applied, the device is ready to operate. If the voltage on the L1 phase is higher than 180 V AC, then the receiver is supplied from another phase. If the voltage on the L1 drops below 180 V AC, then there is an automatic switch to the L2 phase in <150 ms. Analogically, if the L2 phase voltage drops below 180 V AC, then there is an automatic switch to the L3 phase. In case the L3 phase voltage is below 180 V AC, there is a power supply switch off for the receiver connected to this output. If the given phase is switched off due to a voltage drop of <180 V AC, then it is switched on again at a value of >190 V AC (hysteresis 10 V). The L1 is the priority phase. In case its parameters are correct, then this phase will supply the receiver. For example, if a receiver is supplied by the L3 phase and, at the same time, the L1 has correct parameters again, then an automatic switch to the L1 phase supply will occur. If the voltage on a particular phase is >180 V AC, the appropriate LED switches on. This LED switches off if voltage drops below 180 V AC. The phase switching on and switching off times are the same and equals about 150 ms.

### Operation – time diagram:



### Internal connection arrangement – PK1, PK2, PK3 relays:



1. ZAMEL Sp. z o.o. assures a 24-month warranty for the product.
2. The manufacturer's guarantee does not cover any of the following actions:
  - a) mechanical damage during transport, loading / unloading or under other circumstances,
  - b) damage caused by incorrect product mounting or misuse,
  - c) damage caused by unauthorised modifications made by the PURCHASER or any third parties to the product or any other devices required for the product functioning,
  - d) damage caused by Act of God or any other incidents independent of the manufacturer – ZAMEL Sp z o.o.
  - e) supply sources (batteries) included in the device during selling (if they are included).
3. The PURCHASER shall lay any claims in writing in the place of purchase or to ZAMEL Sp. z o.o.
4. ZAMEL Sp. z o.o. is liable for processing any claim according to current Polish legislation.
5. ZAMEL Sp. z o.o. shall process the claim at its own discretion: product repair, replacement or money return.
6. The manufacturer's guarantee is valid in the Republic of Poland.
7. The PURCHASER's statutory rights in any applicable legislation whether against the retailer arising from the purchase contract or otherwise are not affected by this warranty.