



# ULTRA 220 SUPRESOR DE PICOS

Electronic voltage protector with transient voltage suppressor for electronic or inverter type A/C and refrigeration equipment

## Overview

The BREAKERMATIC ULTRA 220 SUPRESOR DE PICOS is designed to prevent damage to your 220V equipment caused by voltage fluctuations in panels or electronic control systems. It features four adjustment knobs for high/low voltage, standby cycle duration, and response time, as well as an on/off switch.

Mounting can be done using an omega rail (DIN rail) for electrical panels, or directly to a wall or box using built-in mounting brackets.

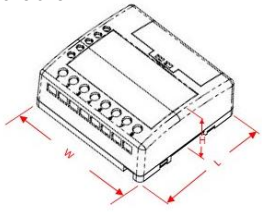
## Operation

- Protection against steady-state voltage variations.** The BREAKERMATIC ULTRA 220 SUPRESOR DE PICOS disconnects the output if the steady-state voltage is above the voltage set on the "over voltage" knob or below the voltage set on the "under voltage" knob. The response time is adjusted on the "disconnection time" knob between 1 and 8 seconds. The voltage must remain outside the range longer than the response time before the output will be disconnected. While the fault persists, the corresponding high or low voltage indicator will remain illuminated.
- Reconnection delay or standby cycle.** When the protector is energized, or at the end of a voltage fault, the protector will initiate a time delay before connecting the output. The duration of the time delay can be adjusted using the "delay time" knob between 30 s and 4 min 30 s. The standby cycle protects sensitive equipment from short operating cycles.
- Blackout detection, sag detection, etc.** The protector will disconnect the load if it detects a sudden voltage drop below 50% of the nominal voltage and initiate a standby cycle. The blackout detector's response time is instantaneous; the minimum blackout duration is specified in the specifications, but it is guaranteed to be longer than the maximum transfer time on distribution lines.
- Transient surge voltages.** Transient surges are very short-duration, high-energy voltage spikes produced by the connection or disconnection of loads or induced by atmospheric discharges near the electrical network, which propagate through it until they reach the equipment. The BREAKERMATIC ULTRA 220 SUPRESOR DE PICOS trims transient surges between phases (differential mode) and between each phase and ground (common mode) without disconnecting the output. Transient surge protection may degrade with use. A "surge protection" indicator will be lit whenever the surge suppressor is operational; if it turns off, it indicates that a transient may have degraded the suppression element. The brightness of this indicator may be dimmer than the other indicators; this is normal.

## Models

Model	Nominal Voltage	Nominal amperage	Frequency	No. Phases	Cut off voltages	Reconnecti on delay	Response delay	On/Off Switch	Languages
PMP220-BD0E++	220VAC	30A	50/60 Hz	1	Adjustable	adjustable	adjustable	Yes	Spa. – Eng.
PMP220-AD0E++	220VAC	40A	50/60 Hz	1	Adjustable	adjustable	adjustable	Yes	Spa. – Eng.

# Specifications

<b>Electrical</b>			
Nominal Voltage	220	VAC	
Nominal Frequency	50 - 60	Hz	
Steady state voltage protection			
Low cut-off voltage, minimum position	150 +/- 3%	VAC	
Low cut-off voltage, maximum position	210 +/- 3%	VAC	
High cut-off voltage, minimum position	210 +/- 3%	VAC	
High cut-off voltage, maximum position	280 +/- 3%	VAC	
Reconnection Hysteresis	5 - 10	VAC	
Response delay, minimum position	1 +/- 20%	s.	
Response delay, maximum position	8 +/- 20%	s.	
Standby cycle			
Reconnection delay time, minimum position	30 +/- 20%	s.	
Reconnection delay time, pos Maximum	4:30 +/- 20%	Min:seg	
Blackout detection			
Minimum blackout duration (0% nominal voltage)	32 -64	ms	
Minimum brownout duration (50% nominal voltage)	>100	ms	
Transient voltage suppressor			
IEEE C62.41 Location	Cat. A3 / B3		
Allowed Maximum continuous voltage (r.m.s.)			
Phase-phase	300	VAC	
Phase-ground	300	VAC	
Voltage protection level (clamping voltage).			
Phase-phase	1	KV	
Phase-ground	1	KV	
Maximum peak current (1 time, 8/ 20 us)			
Phase-phase	6.5	KA	
Phase-ground	6.5	KA	
Maximum peak current (2 times)			
Phase-phase	4	KA	
Phase-ground	4	KA	
<b>Maximum load</b>	PMP220-BD0E++	PMP220-AD0E++	
Maximum Resistive Load (cos φ = 1)			
Current (Amperage)	30	40	A
Power	6.6	8.8	KW
Electric motors, maximum load capacity			
Motor nominal power	1.5 / 1	2 / 1.5	H.P. / KW
Nominal amperage Maximum	9	13.3	A
Maximum Input nominal power	2	3	KW
Maximum Load for inverter type air conditioner or Refrigeration Equipment			
Input power consumed. Nominal / Maximum	3.3 / 3.6	4.4/4.8	KW
Current (Amperage) Nominal / Maximum	14/16	19 / 22	A
Maximum Load for Conventional Air Conditioner or Refrigeration Equipment			
Input power consumed Maximum	2.6	3.5	KW
Nominal amperage Maximum	12	16	A
Apparent Power (No load)	15	15	VA
Minimum required load (see note 1)	0	2	W
<b>Mechanicals</b>			
Dimensions			
			
Length	102	mm	
Width	109	mm	
Height	43	mm	
Weight	280	gr.	

<b>Connection terminals</b>		
Screw thread	6-32	
Screwdriver Phillips Flat	PH2 1.0 x 5.5	mm
Tightening torque min. / max.	0.8 / 1	Nm
Wire section / gauge (solid or multifilament) (see notes 2, 3, 4 and 5) Minimum Maximum	0.34/ 22 4 / 8	mm <sup>2</sup> / AWG mm <sup>2</sup> / AWG
Recommended wire stripping length	7-8	Mm
<b>Isolation materials</b>		
Enclosure	ABS	
Terminals Block	PBT	
Printed circuit board	FR4	
<b>Flame retardant classification (UL94)</b>		
Enclosure	V0, 5VA	
Terminals block	V0	
Printed circuit board	V0	
Isolation resistance (NTC1650:2004 Num 17.1)	>550	Mohms
Dielectric strength (NTC1650:2004 num 17.2)	>2	KV
<b>Environmental</b>		
Maximum operating ambient temperature	45	°C
Place of use: Indoor use, in a dry and ventilated place Outdoor use and/or in wet places	Yes No	
Enclosure ingress protection IP ( IEC 60529)	IP40	

**Note 1:** The PMP220-AD0E++ ULTRA 220-A Protector requires a minimum load for proper operation.

Due to the type of switch, the A model will allow a current of 82 uA to flow even with the switch off or during the standby cycle. Some low-power devices in standby mode may not operate properly if this minimum load is not guaranteed.

**Caution:** If you energize the PMP220-AD0E++ protector without a load, it will present an output voltage as high as the input voltage, even with the switch off or during the standby cycle. To make connections, you must completely de-energize both phases of the protector.

**Note 2:** For currents greater than 20 A with direct cable connection to the terminal block, use solid wire.

**Note 3:** The terminals supplied are for 12-10 AWG (2.05 – 2.5 mm<sup>2</sup>) wire and can be used up to 30 A.

**Note 4:** For two identical conductors in a single terminal, maximum 2.5 mm<sup>2</sup> or 10 AWG.

**Note 5:** Use the appropriate cable according to the national electrical standard or the specifications of the manufacturer of the equipment to be protected.

## Product certificates

NOM NOM-003-SCFI-2014 (NMX-J-515-ANCE)

## Application notes

The maximum cooling capacity will depend on the efficiency of the A/C or refrigeration equipment. To determine the input power consumed by your equipment, divide the rated cooling capacity by the EER (not to be confused with the SEER). It should not exceed the rating indicated in the protector's specification.

Care should be taken to use consistent units. If the cooling capacity is expressed in BTU/h, the EER is expressed in BTU/Wh. Alternatively, the cooling capacity can be expressed in W or kW and the EER in W/W.

Example: a) Nominal capacity 48,000 BTU/h b) EER 10.9 BTU/Wh

We obtain: Pin = 48,000/10.9 = 4390W = 4.39 KW < 4.4 KW OK

## Shipping packaging

Type	Capacity	Dimensions (Length x Width x Height) (cm)	Models	Weight (Kg)
Carton CC48	48 pcs (6 x 8 pack)	58 x 33 x 52	A B	15.8 15.5
Carton CC 8 pack	8 pcs in blister	28 x 18.58 x 22	A B	2.63 2.58

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