



# ULTRA 220 Pro

## Professional Electronic voltage protector for conventional A/C and refrigeration equipment

## Overview

The BREAKERMATIC Ultra 220 Professional is designed to prevent damage to your 220V refrigeration equipment caused by voltage fluctuations. It features three adjustment knobs on the front for high and low cut-off voltage and the duration of the standby cycle, as well as a switch to turn the protector on and off.

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

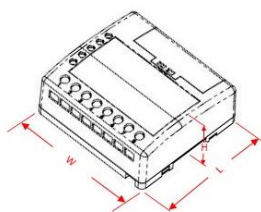
## Operation

1. **Protection against steady-state voltage variations.** The BREAKERMATIC ULTRA 220 PRO 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 voltage must remain outside the range longer than the response time for the disconnection to be activated. While the fault persists, the corresponding high or low voltage indicator will remain illuminated.
2. **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 2 minutes 30 seconds and 4 minutes 30 seconds. The standby cycle protects sensitive equipment from short operating cycles.
3. **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 will initiate a standby cycle. The response time of the blackout detector is instantaneous; the minimum blackout duration is specified in the specifications, but it is guaranteed to be greater than the maximum transfer time on distribution lines.

## Models

Model	Nominal Voltage	Nominal amperage	Frequency	No. Phases	Cut off voltages	Reconnection delay	Response delay	On-off switch	Language
PMP220-BD0EST	220VAC	30A	50/60 Hz	1	Adjustable	Adjustable	1s	Yes	Spa.- Eng.
PMP220-AD0EST	220VAC	40A	50/60 Hz	1	Adjustable	Adjustable	1s	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	1 +/- 20%	s.	
Standby Cycle			
Reconnection delay time, minimum position	2:30 +/- 20%	Min:seg	
Reconnection delay time, maximum position	4:30 +/- 20%	Min:seg	
Blackout detection			
Minimum blackout duration (0% nominal voltage)	32 -64	ms	
Minimum brownout duration (50% nominal voltage)	>100	ms	
<b>Maximum load</b>	PMP220-BD0EST	PMP220-AD0EST	
Maximum Resistive Load (cos $\phi$ = 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
Maximum Motor nominal amperage	9	13.3	A
Maximum Motor Input nominal power	2	3	KW
Maximum Load for Conventional Air Conditioner or Refrigeration Equipment			
Maximum A/C Input power consumed	2.6	3.5	KW
Maximum A/C Nominal amperage	12	16	A
Apparent Power (No load)	15	15	VA
Minimum required load (see note 1)	0	2	W
<b>Mechanicals</b>			
Dimensions			
	Length L	102	mm
	Width W	109	mm
	Height H	43	mm
	Weight	280	gr.
<b>Connection terminals</b>			
Screw thread	6-32		
Screwdriver			
Phillips	PH2		
Flat	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	0.34/ 22	mm <sup>2</sup> / AWG	
Maximum	4 / 8	mm <sup>2</sup> / AWG	
Recommended wire stripping length	7-8	Mm	
<b>Isolation materials</b>			
Enclosure	ABS		
Terminal block	PBT		
Printed circuit board	FR4		
Flame retardant classification (UL94)			
Enclosure	V0, 5VA		
Terminal block	V0		
Printed circuit board	V0		
Isolation resistance (NTC1650:2004 Num 17.1)	>550	Mohms	
Dielectric strength (NTC1650:2004 num 17.2)	>2	KV	

Environmental		
Maximum operating ambient temperature	45	°C
Place of use: Indoor use, in a dry and ventilated place	Yes	
Outdoor use and/or in wet places	No	
Enclosure Ingress Protection IP ( IEC 60529)	IP40	

**Note 1:** The PMP220-AD0EST 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-AD0EST 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

1. 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:  $\text{Pin} = 48,000/10.9 = 4390\text{W} = 4.39\text{ KW} < 4.4\text{ KW OK}$

## 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 14.8
CC 8 pack	8 pcs en blister	28 x 18.58 x 22	A B	2.50 2.47