



ULTRA 220

Single Phase Electronic voltage protector

Overview

The BREAKERMATIC Ultra 220 is designed to prevent damage to your 220V commercial or industrial equipment caused by voltage fluctuations. It is connected via a terminal block covered by a safety cap that prevents accidental contact with the terminals. It is easily attached to the wall or to the equipment chassis using a practical bracket supplied with its screws.

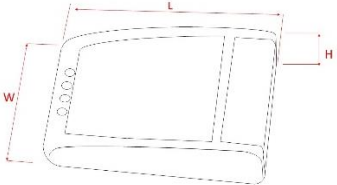
Operation

1. **Protection against steady-state voltage variations.** The BREAKERMATIC ULTRA 220 disconnects the output if the steady-state voltage is above the high cut-off voltage or below the low cut-off voltage. The response time for voltage variations is typically 1 s. 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. **Models A and B** have fixed cut-off voltages. Models AM, BM, and AT have knobs to adjust the cut-off voltages.
3. **Reconnection delay or wait cycle.** Upon energizing the protector, or upon termination of a voltage fault, the protector will initiate a time delay before connecting the output. The time delay duration is typically 4 minutes. The wait cycle protects sensitive equipment from short operating cycles. For example, in the case of refrigeration or air conditioning equipment, it delays startup long enough to allow pressure equalization in the system. The AT model has a knob to adjust the delay time.
4. **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.
5. **Autostart®** The autostart feature reduces the reconnection delay or wait cycle to a few seconds if the protector has been de-energized for more than 10 minutes. This allows the protector to quickly turn on the output after a prolonged period of blackout or power loss. The AT model does not have this feature.

Models

Reference	Model	Nominal Voltage	Nominal amperage	Maximum Motor load	Cut off voltages	Reconnection delay	Autostart	Response delay	On/Off switch	Language
PBE220-B00EST	Ultra 220 B	220VAC	30A	1 ½ H.P.	176V – 253V	4 min	Yes	1.5s	No	Spa. – Eng.
PBE220-A00EST	Ultra 220 A	220VAC	40A	2 H.P.	176V – 253V	4 min	Yes	1.5s	No	Spa. – Eng.
PBE220-BM0EST	Ultra 220 BM	220VAC	30A	1 ½ H.P.	Adjustable	4 min	Yes	1.5s	Yes	Spa. – Eng.
PBE220-AM0EST	Ultra 220 AM	220VAC	40A	2 H.P.	Adjustable	4 min	Yes	1.5s	Yes	Spa. – Eng.
PBE220-AT0EST	Ultra 220 AT	220VAC	40A	2 H.P.	Adjustable	Adjustable	No	1.5s	No	Spa. – Eng.
PBE220-B00UEM	Ultra 220 B	220VAC	30A	1 ½ H.P.	176V – 253V	4 min	Yes	1.5s	No	Trinidad.
PBE220-BM0UEM	Ultra 220 BM	220VAC	30A	1 ½ H.P.	Adjustable	4 min	Yes	1.5s	Yes	Trinidad.
PBE220-AM0UEM	Ultra 220 AM	220VAC	40A	2 H.P.	Adjustable	4 min	Yes	1.5s	Yes	Trinidad.
PBE220-AT0ING	Ultra 220 AT	220VAC	40A	2 H.P.	Adjustable	Adjustable	No	1.5s	No	Trinidad.

Specifications

Electrical			
Nominal Voltage	220	VAC	
Nominal Frequency	50 - 60	Hz	
Steady state voltage protection			
	A / B	BM / AM / AT	
Low cut-off voltage, minimum position	176 +/- 3%	140 +/- 3%	VAC
Low cut-off voltage, maximum position		210 +/- 3%	VAC
High cut-off voltage, minimum position	253 +/- 3%	210 +/- 3%	VAC
High cut-off voltage, maximum position		280 +/- 3%	VAC
Reconnection Hysteresis	5 - 10	VAC	
Response delay	1 +/- 20%	s.	
Stand by cycle			
Reconnection delay time (Models: A / B / AM / BM)	3:50 +/- 20%	min. : sec.	
Reconnection delay time, minimum position (Model AT)	2:00 +/- 20%	min. : sec.	
Reconnection delay time, maximum position (Model AT)	4:30 +/- 20%	min. :sec.	
Blackout detection			
Minimum blackout duration (0% nominal voltage)	32 -64	ms	
Minimum brownout duration (50% nominal voltage)	>100	ms	
Maximum load	B / BM	A / AM / AT	
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 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 load required (see note 1)	0	2	W
Mechanicals			
Dimensions			
	Length L	102	mm
	Width W	109	mm
	Height H	43	mm
	Weight	280	gr.
Connection terminals			
Screw thread	M4		
Screwdriver			
Phillips	PH2		
Flat	1.0 x 5.5	mm	
Tightening torque min. / max.	1.2 / 1.8	Nm	
Wire section / gauge (solid or multifilament) (see notes 2,3,4 and 5)			
minimum	0.34/ 22	mm ² / AWG	
maximum	4 / 10	mm ² / AWG	
Recommended wire stripping length	7-8	mm	
Isolation materials			
Enclosure	ABS		
Terminals block	PA66		
Printed circuit board	FR4		
Flame retardant classification (UL94)			
Enclosure	V0, 5VA		
Terminals block	V0		
Printed circuit board	V0		

Isolation resistance (NTC1650:2004 No. 17.1)	>550	Mohms
Dielectric strength (NTC1650:2004 no. 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 A/AM and AT models require a minimum load for proper operation.

Due to the type of switch, these models 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 a PBE220-Ax0EST 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 mm²) wire and can be used up to 30 A with multi-strand wire.

Note 4: For two identical conductors in a single terminal, maximum 2.5 mm² or 10 AWG.

Note 5: Use the appropriate gauge wire for the current of your equipment 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 corrugado CC54	54 pcs (9 x 6 pack)	51 x 35 x 50	B A BM AM, AT	16.5 16.9 16.95 17.3
CC 6 pack	6 pcs en blister	33.5 x 16 x 16	B A BM AM,AT	1.83 1.88 1.88 1.91