



BREAKERMATIC AIR 220 INVERTER

Electronic voltage protector for inverter type air conditioners and refrigeration equipment.

Overview

The BREAKERMATIC AIRE 220 INVERTER is designed to prevent damage caused by electrical surges to your 220V equipment, especially mini-split air conditioners and refrigeration equipment connected with NEMA 6-15, NEMA 6-20, or NEMA 10-20 plugs. It includes a surge suppressor that protects your equipment's electronic components.

Operation

- Protection against steady-state voltage variations.** The BREAKERMATIC AIRE 220 disconnects the output if the steady-state voltage is above the high cut-off voltage or below the low cut-off voltage indicated in the specifications. In the case of adjustable equipment, the cut-off voltages can be set within the ranges indicated in the specifications. The response time to a fault 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 lit.
- Reconnection delay or standby cycle.** When the protector is energized, or at the end of a voltage failure, the protector will initiate a time delay before connecting the output. The duration of the time delay is indicated in the specifications. The wait cycle protects sensitive equipment from short operating cycles, allowing, in the case of A/C and refrigeration equipment, system pressures to equalize before reconnecting.
- Autostart®.** This feature reduces the standby cycle to 5 seconds when the protector has been off for a considerable amount of time.
- Detection of blackouts, "sag", etc.** The protector will disconnect the load almost instantaneously, if it detects a sudden voltage drop below 50% of the nominal voltage, initiating a standby cycle.
- Suppression of transient over voltages.** Transient over voltages are very short-duration, high-energy voltage spikes produced by the connection or disconnection of loads or induced by atmospheric discharges near the electrical grid. They propagate through it until they reach the equipment. The BREAKERMATIC AIRE 220 INVERTER trims transient over voltages between phase and neutral (differential mode) and between each current-carrying line and ground (common mode) without disconnecting the output.

Models

Model	Nominal Voltage	Nominal amperage	Frequency	Cut off voltages	Reconnection delay time	Response delay time	Connections	Voltage protection level	On-off switch	Language
PIN220-C++EST	220VAC	15A	50/60 Hz	176V-267V	4 min	1 s	NEMA 6-15	1 kV	No	Spanish
PIN220-D++EST	220VAC	20A	50/60 Hz	176-267 V	4 min	1 s	NEMA 6-20	1 kV	No	Spanish
PIN220-C++ING	220VAC	15A	50/60 Hz	176V-267V	4 min	1 s	NEMA 6-15	1 kV	No	English
PIN220-D++ING	220VAC	20A	50/60 Hz	176-267 V	4 min	1 s	NEMA 6-20	1 kV	No	English
PIN220-G++EST	220VAC	15A	50/60 Hz	176-267 V	4 min	1 s	NEMA 6-15P NEMA 6-20R	1 kV	No	Spa.-Eng.
PIN220-GM+EST	220VAC	15A	50/60 Hz	Adjustable	4 min	1 s.	NEMA 6-15P NEMA 6-20R	1 kV	Yes	Spa.-Eng.



PIN220-C++ING



PIN220-D00ING



PIN220-GM+EST

Specifications

Electrical					
Nominal Voltage	220				VAC
Nominal Frequency	50 - 60				Hz
Steady state voltage protection					
	C++/ G++	GM+	D++		
Low cut-off voltage	176 +/- 3%		176 +/- 3%		VAC
Min position		150 +/- 3%			
Max position		214 +/- 3%			
High cut-off voltage	267 +/- 3%		267 +/- 3%		VAC
Min position		214 +/- 3%			
Max position		278 +/- 3%			
Reconnection Hysteresis	5 - 10				VAC
Response delay	1 +/- 20%				s.
Reconnection delay cycle	4:00 +/- 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				
	C++ / G++	CM+ / GM+	D++		
Allowed Maximum continuous voltage (r.m.s.)					
Phase-neutral	300	300	300		VAC
Phase-ground	300	300	300		VAC
Voltage protection level (clamping voltage).					
Phase-neutral	1	1	1		kV
Phase-ground	1	1	1		kV
Maximum peak current (1 time, 8/ 20 us)					
Phase-neutral	6.5	6.5	6.5		kA
Phase-ground	6.5	6.5	6.5		kA
Maximum peak current (2 times)					
Phase-neutral	4	4	4		kA
Phase-ground	4	4	4		kA
Energy (10/1000 us)	3 x 280				
Maximum load					
	C++/ G++	CM+ / GM+	D++		
Maximum Resistive Load (cos φ = 1)					
Current (Amperage)	15	15	20		A
Power	3.3	3.3	4.4		KW
Maximum Load for inverter type air conditioner or Refrigeration Equipment					
Input power consumed. Nominal / Maximum	3.3/3.6	3.3/3.6	4.4/4.8		KW
Current (Amperage) Nominal / Maximum	14/16	14/16	19 / 22		A
Maximum Load for Conventional Air Conditioner or Refrigeration Equipment					
Input power consumed Maximum	2.6	2.6	3.5		KW
Nominal amperage Maximum	12	12	16		A
Apparent Power (No load)	15				VA
Mechanicals					
Dimensions					
Length	135				mm
Width	87				mm
Height	45				mm
Weight	237				gr.
Connections					
	C++	G++ / GM+	D++		
Input plug	NEMA 6-15P	NEMA 6-15P	NEMA 6-20P		
Output Receptacle	NEMA 6-15R	NEMA 6-20R	NEMA 6-20R		
Isolation materials					
Enclosure	ABS				
Plug and Receptacle	PC				
Printed circuit board	FR4				
Flame retardant classification (UL94)					
Enclosure	V0, 5VA				
Plug and Receptacle	V0, 5VA				
Printed circuit board	V0				
Glow wire test (NTC 5283:2015, NMX-J-565/2-11:2005)	Enclosure 650°C pass Receptacle 850°C pass				
Ball pressure test NTC 1650 num. 25.2 y 25.3	<2				mm.
Isolation resistance (NTC1650:2004 Num 17.1)	>550				Mohms
Dielectric strength (NTC1650:2004 num 17.2)	>2				kV
Impact (NTC /IEC 62262:2013)	pass				
Contacts					
Material	Tinned Brass 260 (70% Cu, 30% Zn) Electroplated Sn				
Oxidation Resistance Test (NTC 1650 num 29)	It shows no traces of corrosion or oxidation.				

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	

Application notes

1. As a general rule, select the surge protector that fits your A/C plug.
2. Check the rated input current of your equipment, which should not exceed that indicated in the surge protector's specifications table.
3. 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 that indicated in the surge protector's specification. Care should be taken to use consistent units: if the cooling capacity is expressed in BTU/h, the EER in BTU/Wh. Alternatively, the cooling capacity can be expressed in W or kW, and the EER in W/W.
4. Example: Checking PIN220-D++ for protect an Air conditioner with the following specifications: a) Cap 48,000 BTU/h b) EER 10.9 BTU/Wh
We get: $\text{Pin} = 48000 / 10.9 = 4390\text{W} = 4.39\text{ KW} < 4.4\text{ KW (PIN220-D++) ok}$

Shipping packaging

Type	Capacity	Dimensions (Length x Width x Height) (cm)	Weight (Kg)
Carton corrugado CC54	54 pcs (9 x 6 pack)	51 x 35 x 50	16.5
CC 6 pack	6 pcs en blister	33.5 x 16 x 16	1.83