



Powerware

Powerware® Power Conditioners

Product Focus

Powerware's ferroresonant products are proven technology. In 1938, we were awarded the first patent for ferroresonant power conditioners: the constant voltage transformer. Since then, our technology has remained at the forefront of ferroresonant power conditioning.

Today, Powerware's ferroresonant power conditioners supply sinewave output, which is especially important for computer applications.

Whether you purchase a model 200, 210 or 26 voltage regulator, you can count on an average of 25 years service from your unit.

Every ferroresonant power conditioner is manufactured to exacting specifications and is subject to rigorous quality control.

The ferroresonant power conditioners protect equipment from all power problems, other than the complete loss of power. They excel at tightly regulating the voltage, providing superior noise attenuation and are ruggedly designed to withstand the harshest electrical environments.

Possessing no moving parts, ferroresonant power conditioners are virtually maintenance free.

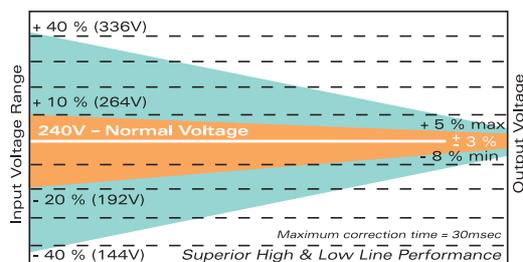
What is Ferroresonance?

Simply put, ferroresonance is the property of a transformer design in which the transformer contains two (2) separate magnetic paths with limited coupling between them.

reduce the changes in supply voltage and provide more constant voltage to the load.

A magnetic device is non linear. Its reluctance changes abruptly above a certain magnetic flux density. At this point, the magnetic device is defined as being in saturation.

The design of the ferroresonant transformer allows one magnetic path to be in saturation, while the other is not.



Typical Model 200 or 210 Performance

The output contains a parallel resonant tank circuit and draws power from the primary to replace the power delivered to the load.

Note that "resonance" in ferroresonance is similar to that in linear circuits with series or parallel inductors and capacitors, where the impedance peaks at a particular frequency. In a non linear circuit, such as a ferroresonant transformer, "resonance" is used to

As a result, further change in the primary voltage will not translate into changes in the saturated, or secondary voltage, and voltage regulation results.

Features and Benefits

- **Superior Low Line Performance**
Specified performance is maintained for all loads 0 - 100% of nominal rating.
- **Switchmode Computer Load Compatibility**
Able to support typical computer loads when input supply mains voltage is 50% below nominal.
- **240 Volt, 230 Volt or 220 Volt Models**
Separate models to suit different nominal supplies or particular nominal output voltage requirements.
- **200% Overload Rated**
Suitable for use with computer start up overloads. Units are output short circuit proof.
- **On Site Configuration**
7.5 to 18kVA units can be site configured as Single Phase or Three Phase operation, if required.
- **Selectable Voltages**
Hardwired 26 Series units have selectable input and output voltages.
- **5 Year Warranty**
Exceptional MTBF (Mean Time Between Failure), an optimum combination of performance to cost effective power conditioning.

Powerware® 200/210 Power Conditioners

500VA to 2500VA Portable



Designed and manufactured in Australia, the Powerware 200/210 portable power conditioner provides smooth stepless control of output voltage to your computer or electronic system, whilst attenuating harmful impulses, surges and other power line disturbances.

The Powerware 200/210 incorporates improved surge withstand capabilities, as specified by ANSI/IEEE C62.41-1980 and is covered by the SECV Certificate of Suitability Number CS84292V.

SPECIFICATIONS	
INPUT	
Voltage:	220 or 240 Volt AC
Frequency:	50 Hz
Input Voltage Range:	+ 10%, -20% (40%)
Protection:	ANSI/IEEE C62.41-1980 A and B waveforms suppressed to safe levels.
OUTPUT	
Nominal Voltage:	220 or 240 Volt AC
Frequency:	50 Hz
Voltage Regulation:	3% for +10%, -20% input. +5%, -8% for 40% input.
Control:	AC on/off switch
POWER	
Efficiency:	90%
Response/Correction Time:	Return to regulation envelope within 30 msec.
Dynamic Response:	Continuous and smooth correction for input voltage fluctuations.
OVERLOADS	
	200% of rated load for 10 seconds without damage. 500% of rated load for 10 msec.
ELECTRICAL NOISE ATTENUATION	
Transverse Mode:	60 dB typical, (80 dB max.) 4kHz to 20 MHz
Common Mode:	120 dB typical, (140 dB max.) 2kHz to 1 MHz
OUTPUT HARMONIC DISTORTION	
	Less than 3% THD on linear loads. No greater than 5% on typical computer loads.
ENVIRONMENTAL	
Operating Ambient:	-20°C to +50°C
Relative Humidity:	0 to 95% non-condensing
Ventilation:	Natural Convection Cooled
STATUS INDICATION	
Power On:	Amber lamp
OVERLOAD PROTECTION	
	Output short circuit protection
WARRANTY	
	5 years

Built to protect

- Programmable logical controls (PLC)
- Photographic equipment
- Remote computer peripherals
- Copiers and laser printers
- Process control equipment
- CNC machinery
- Entire installations

ORDERING DETAILS

240 VOLT IN/OUT

Rated Output VA	Part Number	Current AMPS (Cont.)	Output Receptacles	Weight (kg)	Enclosure Size (Note 3)
500	210-26-650-00	2.08	2	23	3
1000	210-26-710-00	4.16	3	36	4
2000	210-26-720-00	8.33	3	55	4
2500	210-26-725-00*	10.41	3	66	4

220 VOLT IN/OUT HARDWIRED UNITS

Rated Output VA	Part Number	Current AMPS (Cont.)	Weight (kg)	Enclosure Size (Note 3)
500	200-44-650	2.27	23	3
1000	200-44-710	4.55	36	4
2000	200-44-720	9.09	55	4
2500	200-44-725	11.36	66	4

Notes:

1. 240 Volt Hardwired options available to order
2. Special voltage configurations available to order
3. Enclosure sizes (mm) Size 3: 195 (H) x 210 (W) x 328 (D)
Size 4: 252 (H) x 280 (W) x 421 (D)
4. * Input lead fitted with 15 Amp plug top (all other units fitted with 10 Amp plug tops)
5. Specific input leads and output sockets can be fitted to order

Powerware® 200 Power Conditioners 3kVA to 22kVA



SPECIFICATIONS	
INPUT	
Voltage:	220 or 240 Volt AC (Refer "Ordering Details" for configuration options)
Frequency:	50 Hz
Input Voltage Range:	+ 10%, -20% (40%)
Protection:	ANSI/IEEE C62.41-1980 A and B waveforms suppressed to safe levels.
OUTPUT	
Nominal Voltage:	220 or 240 Volt AC
Frequency:	50 Hz
Voltage Regulation:	3% for +10%, -20% input. +5%, -8% for 40% input.
Control:	AC on/off switch
POWER	
Efficiency:	90%
Response/Correction Time:	Return to regulation envelope within 30 msec.
Dynamic Response:	Continuous and smooth correction for input voltage fluctuations.
OVERLOADS	
	200% of rated load for 10 seconds without damage. 500% of rated load for 10 msec.
ELECTRICAL NOISE ATTENUATION	
Transverse Mode:	60 dB typical, (80 dB max.) 4kHz to 20 MHz
Common Mode:	120 dB typical, (140 dB max.) 2kHz to 1 MHz
OUTPUT HARMONIC DISTORTION	
	Less than 3% THD on linear loads. No greater than 5% on typical computer loads.
ENVIRONMENTAL	
Operating Ambient:	-20°C to +50°C
Relative Humidity:	0 to 95% non-condensing
Ventilation:	Natural Convection Cooled
STATUS INDICATION	
Power On:	Amber lamp
OVERLOAD PROTECTION	
	Output short circuit protection
WARRANTY	
	5 years

The extension of Powerware ferroresonant power conditioners continues through to 22kVA. These units are mostly suited to hardwired, fixed installation applications for providing smooth stepless control of the output voltage, attenuation of harmful impulses or surges and other power line disturbances. Powerware 200 power conditioners are ideally suited to provide protection in computer rooms, regulation for scientific instrumentation, plus protection and regulated power to sophisticated computer based factory process equipment. To simplify installation, all units are free standing and fitted with castors (excluding 22kVA) and jacking feet. Connections are provided at the rear via a base plate cable entry to an isolation switch.

The flexibility of Powerware 200 power conditioners is increased on units between 7.5kVA and 18kVA. These units can be field configured for single phase or three phase operation with 230 Volt taps provided as standard on 240 Volt In/Out models. Powerware 200 power conditioners (3 to 22kVA) incorporate approved surge withstand capabilities, as required by ANSI/IEEE C62.41-1980.

Built to protect

- Remote computer peripherals
- Copiers and laser printers
- Process control equipment
- CNC machinery
- Programmable logical controls (PLC)
- Photographic equipment
- Entire installations

ORDERING DETAILS				
Rated Output kVA	*Part Number	Configuration	Weight (kg)	Enclosure Size (Note 5)
3	200-26-730	1 Phase only	100	1
3	200-26-730-00**	1 Phase only	100	1
5	200-26-750	1 Phase only	155	2
5	200-26-750-HO***	1 Phase only	155	2
7.5	200-26-775****	1 or 3 Phase	215	2
9	200-26-790****	1 or 3 Phase	270	2
12	200-26-812M****	1 or 3 Phase	360	3
15	200-26-815****	1 or 3 Phase	420	3
18	200-26-818****	1 or 3 Phase	520	3
22.5	200-46-822****	3 Phase only	595	4

Notes:

- * For units with nominal input/output voltage of 220 specify -44-, as in 200-44-730
- ** Units fitted with WIP 15 plug and 4 x 10/15 Amp screw sockets
- *** Units fitted with input terminal block and 4 x 10/15 amp screw sockets
- To avoid nuisance tripping of input circuit breakers, we recommend the use of Heinemann CF1 (curve 1) type for single phase units and Heinemann CF3 (curve 1) for three phase units. Current rating should be at least one size larger than input current stated on unit data plate. See manual or consult your Sales Representative for further details.
- Enclosure Sizes (mm):
Size 1: 600 (H) x 400 (W) x 440 (D)
Size 2: 995 (H) x 525 (W) x 550 (D)
Size 3: 990 (H) x 800 (W) x 550 (D)
Size 4: 1236 (H) x 800 (W) x 550 (D)
- **** 3 Phase loads to be star connected only. Power Conditioners **NOT** to be used for Delta loads.

Powerware® 26 Multivolt Power Conditioners

Multi-Voltage, Hardwired for Industrial Applications



SPECIFICATIONS

INPUT

Voltage:	120-5000VA Models: Field selectable 110/120V or 220/240 or 380/415V
	7.5-15kVA Models: Field selectable 220/240V or 380/415V
Frequency:	50 Hz (60Hz available)

OUTPUT

Voltage:	Field Selectable - 110/120/220/240 Volts AC
Voltage Regulation:	5% for an input line variation of 15%. + 5%, -8% for 40% input.

OUTPUT HARMONIC DISTORTION

Less than 3% THD on linear loads. No greater than 5% on typical computer loads.

EFFICIENCY

85% at full load.

DROPOUT

No loss of output for line loss of 3 msec.

ELECTRICAL NOISE REJECTION

Transverse Mode:	> 60 dB
Common Mode:	> 120 dB

OPERATING TEMPERATURE

-20°C to +50°C

WARRANTY

5 years

Frequently, power transformers are incorporated with process equipment to provide specific voltages for sensitive equipment. Unfortunately, outside interferences will vary the output from these transformers, causing the sensitive equipment to malfunction or fail. The Powerware 26 range of power conditioners provide an immediate answer to this inconvenience, by suppressing and isolating power line interference and regulating the output voltage to $\pm 5\%$. These hardwired power conditioners provide the unique feature of selectable input tap for greater versatility and output voltage taps are also provided. These features make the Powerware 26 power conditioner the ideal choice for a regulated power supply where a three phase source is provided without a neutral line.

The Powerware 26 power conditioner provides superior noise rejection, exceeding 120 dB common mode and 60 dB transverse mode noise rejection. By nature of design, this product is a true, ultra isolation device. The Powerware 26 is available from 120VA through to 15kVA as a panel mounting, hardwired unit.

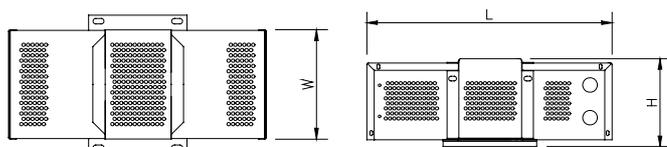
Built to protect

- Remote computer peripherals
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- Photographic equipment
- Entire installations

ORDERING DETAILS

Rated Output VA	Part Number	Height (H) (mm)	Width (W) (mm)	Length (L) (mm)	Weight (kg)
500	2605-0500M	162	200	362	18
1000	2605-1000M	170	200	460	28
2000	2605-2000M	244	288	467	51
3000	2605-3000M	244	288	501	73
5000	2605-5000M	244	288	736	110
*10000	2605-10kM	244	630	736	221
*15000	2605-15kM	244	987	736	350

*Multi Module Units



Typical Single Module Arrangement

Due to continuing product improvement programs, specifications are subject to change without notice.

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