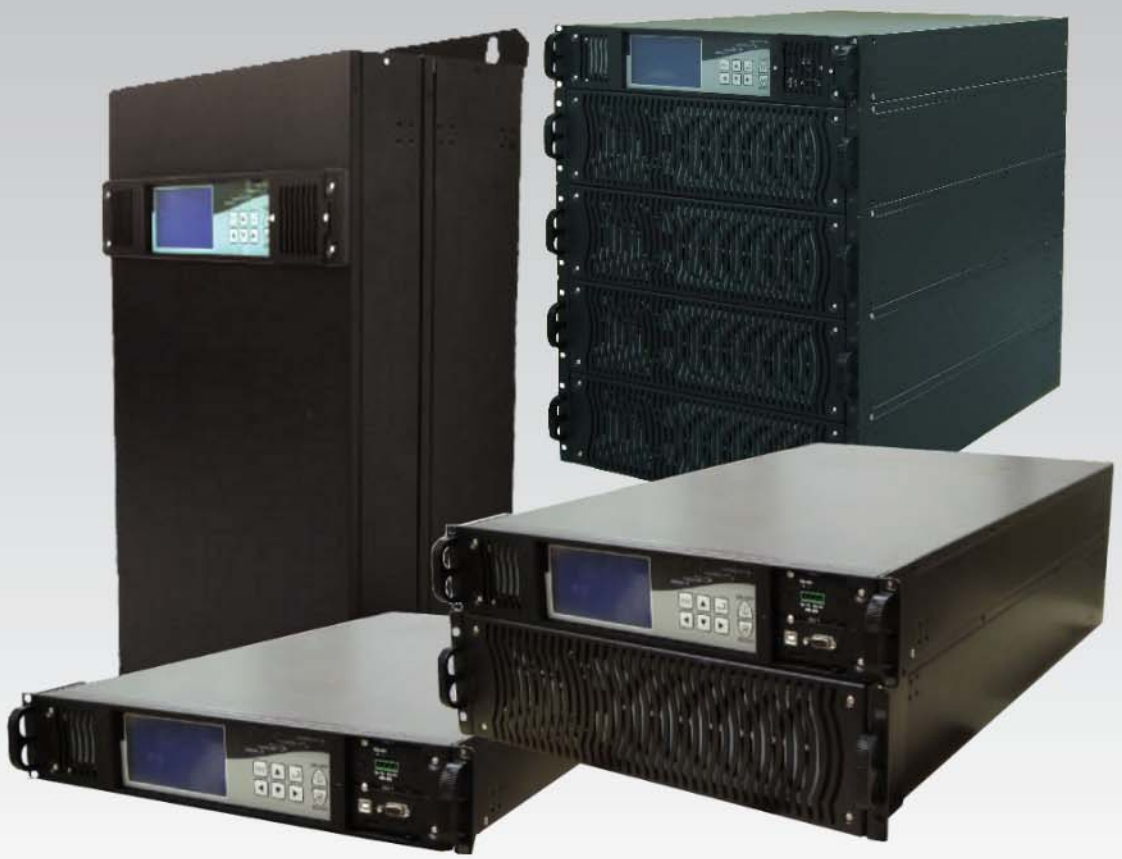
ACTIVE POWER FILTER SERIES

Modular Control and Power Modules

Zcomax Technologies, Inc.

Active Power Filters and Control Modules

Z4D Series



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HARMONIC POLLUTION

The Problem:

Harmonics pollution is an increasing problem that affects all power distribution networks in industrial, commercial, telecom and medical applications. Most power converting equipment generates harmful harmonics, such equipment includes:

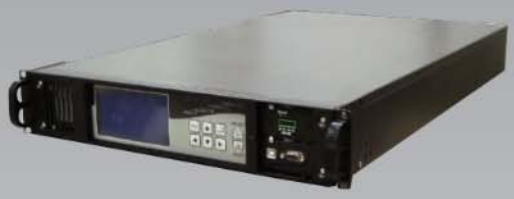
- Uninterruptible Power Systems (UPS)
- DC power system / chargers
- AC / DC variable speed drivers
- Fluorescent lamps
- Frequency converters
- Computers
- Welding machine
- Peripherals
- And many, many more…

The Effects:

The effect is that these impure harmonic signals pollute the voltage/current waveforms and deteriorate the effective usable power for your equipment or systems. When conditions like this persist you may see any combination of the following:

- Over voltage / current in system
- Tripping circuit breakers / power relays
- Overheating of electrical systems / cables
- Malfunctioning automatic control systems
- Voltage distortion and lagging in power factor
- Component failures
- Interference in telecom systems
- Capacitor damage due to resonance
- Measurement equipment inaccuracy

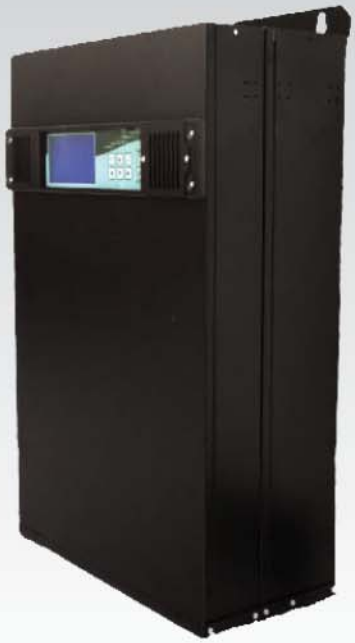
Standard 19” rack mount Configuration:



Control Module

Control + Power Module

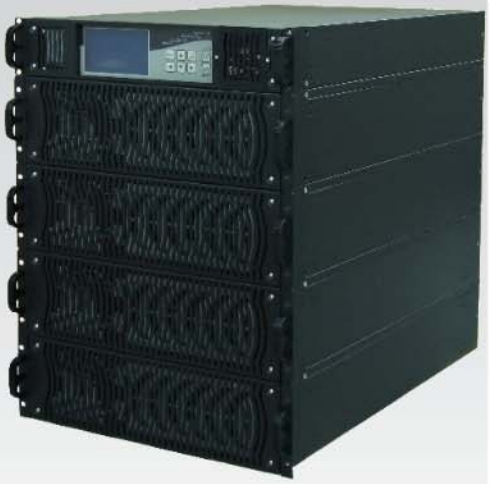
Wall Mount Configuration:



The Solution:

The Zcomax Z4D Series of modular Active Power Filters (APF) are solid-state power converters designed to ensure reliable and safe power by employing the following techniques:

- Eliminate all harmonic currents from non-linear loads
- Compensate the reactive power factor of lagging loads
- Act as a virtual damping resistor to prevent possible harmonic resonance



One Control Module manages up to 4 Power Modules

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Modular Control and Power Modules

General Characteristics

Item	
Storage Temperature	-20°C ~ +70°C
Operating Temperature	0°C ~ +40°C
Relative Humidity	<95%
Operating Altitude	<1000 m
Reference Harmonic Standard	EN 61000-3-4, IEEE 519-1992
Reference Design Standard	EN60146

Ordering Information

Z4D – CR35 – 400E - E

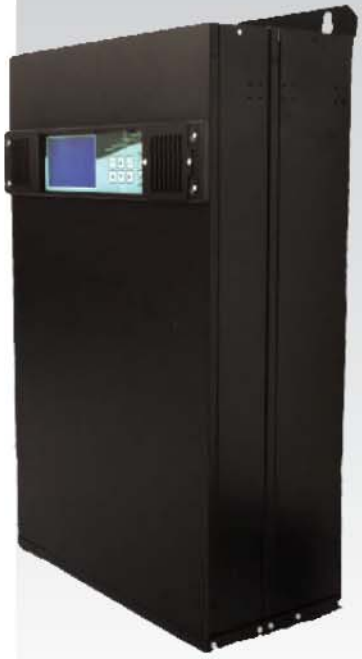
Control Panel Type
C : LCD Panel
E : LED Panel

Voltage Rating
400E : 400V
480A : 480V

Current Rating
030 : 30A
035 : 35A

Outlook Type
R : Rack Mount
W : Wall Mount

Module Type
C : Control Module
P : Power Module



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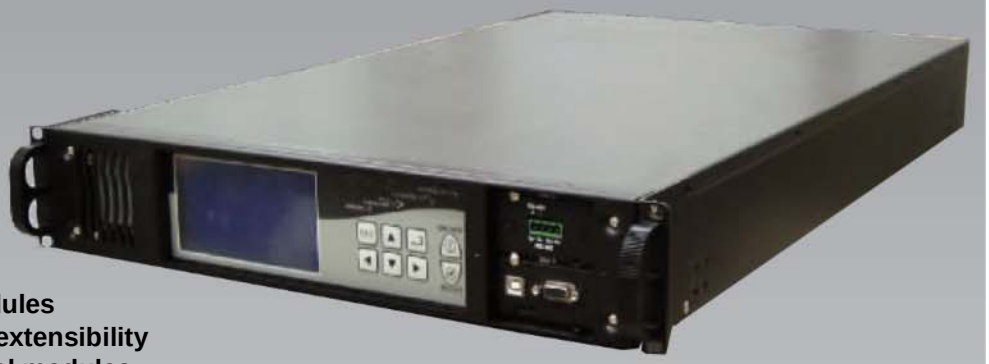
Modular Control and Power Modules



Highlights

- Fully configurable
- IP20 level protection
- Control up to 4 power modules
- Modular design to ensure extensibility
- Interconnect up to 8 control modules

Control Module Specification

Item \ Model Number	Z4D-C35-400EX	Z4D-C30-480AX
Input Voltage	400V ± 15%, -20%	480V ± 15%, -20%
Phase / Wires	3 phase 4 wires / 3 wires	
Frequency	50 / 60 ± 3 Hz (Auto Sensing)	
Compensated Harmonic Orders	From 2nd to 51st order. Up to 12 orders actives simultaneously (2nd ~ 31st). Higher Order Compensation (32nd ~ 51st) Disable / Enable operation.	
Power Factor Correction	Compensate both lagging and leading reactive power	Compensate leading reactive power
	power factor can be programmed from .7 lagging to 0.7 leading	
CT Radio	Configurable primary current 100A ~ 10000A Secondary Current 1A (Standard) / 5A (Optional)	
CT Location	Source or Load side	
Response Time	< 20m sec	
Controllable Power Module	Z4D-P35-400E	Z4D-P30-480A
Number of controllable Power Module	Up to 4 Power Modules	
Parallel	Up to 8 Control Modules	
Maximum Heat Losses	50 Watt	
Color	RAL9011 (Pantone Process Black C)	
Protection Index	IP20	
Dimensions (WxDxH)	440x710x86mm	
Net Weight	5 Kg	

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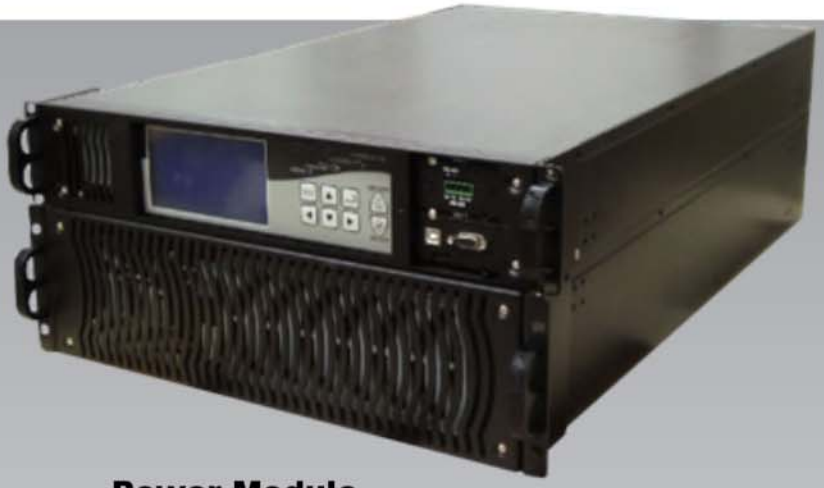
Highlights

- Up to 51st harmonic
- Select up to 12 harmonic orders individually
- Close / open loop control
- Full-time DSP control system
- Programmable power factor correction
- Modular design to ensure extensibility
- Available in 19" rack mount or wall mount configurations



Power Module
(Shown with control module)

Power Module Specification

Item \ Model Number	Z4D-P35-400E	Z4D-P30-480A
Input Voltage	400V ± 15%, -20%	480V ± 15%, -20%
Phase / Wires	3 phase 4 wires / 3 wires	
Frequency	50 / 60 ± 3 Hz	
Maximum Compensation Current Phase	35 Arms	30 Arms
De-Rating Compensation Current / Phase (1)	30 Arms	25 Arms
Maximum Compensation Curretn for Natural	105 Arms	90 Arms
Inrush Current	Less than rated current	
Current Limitation	Yes, at full correcting	
Maximum heat losses	650 Watt	
Color	RAL9011 (Pantone Process Black C)	
Protection Index	IP20	
Dimension (WxDxH)	440 x 710 x 131mm	440 x 710 x 175mm
Net weight	31 Kg	42 Kg

(1) When 2 or more power modules work in power scalable configuration, the power module will downgrade automatically from 35A to 30A. It means 60A/90A/120A while 2/3/4 400V power modules connecting in parallel

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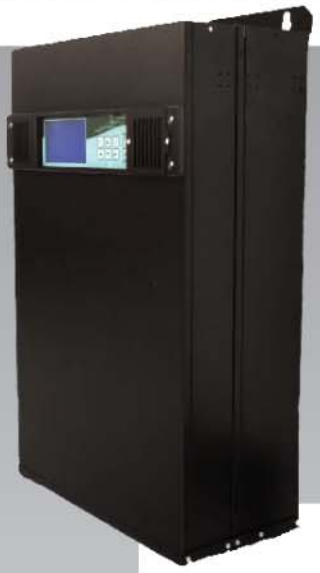
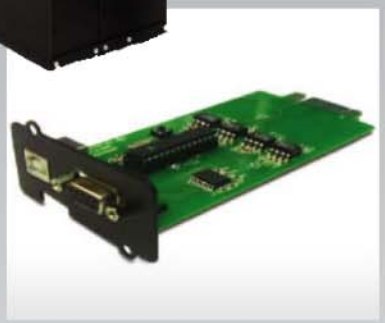


APF Communication

Communication Capability

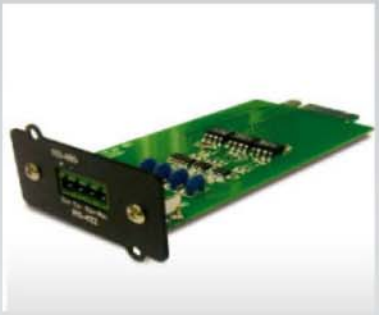
The Zcomax Z4D Series uses J-Bus/MOD bus protocol and provides 2 communication slots that allow for the following communication cards:

- Standard RS232 / USB card
- Optional RS422 / RS485 card
- Optional Ethernet card



Dry Contact

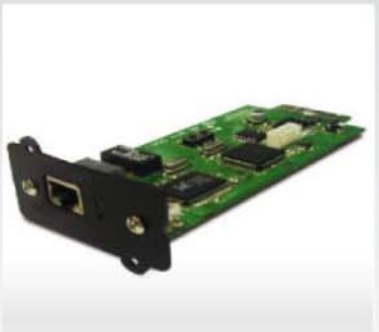
- 5 output dry contacts for easy monitoring
- 1 input dry contact for remote control
- EPO switch for emergency shutdown



Optional Monitoring Software

The Z-link34 software has the following functions for remote monitoring and control:

- Real-time monitoring
- Download parameters, waveforms, spectrum and event logs
- Recording of parameters
- Dry contact programming
- Monitor up to 255 units



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