ENERSINE™ ESP Plus



HOT SWAPPABLE MODULAR ACTIVE POWER FILTER (APF) FOR HARMONIC & REACTIVE CURRENT COMPENSATION

The Ablerex Active Power Filters (APF) in modular topology are the best solution to compensate variable power factors and harmonics distortion. With high harmonic current ratings from 100A to 1200A they are adaptable to any load size for maximum versatility of use.

PERFECT FOR:

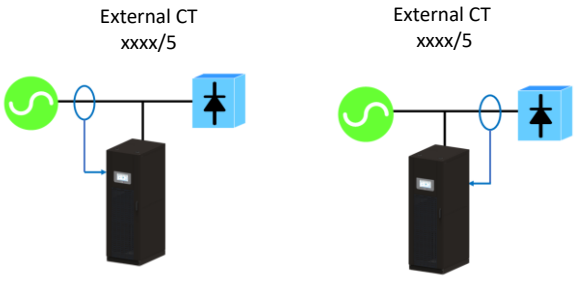
- LV Switchboards
- Motor drive systems (VSD)
- Commercial
- Industrial
- Medical

FEATURES

- Operating Voltage: 208V/380V/400V/415V/480V
- Utilizing 3-Level IGBT Technology
- Harmonic compensation for 3-wire and 4-wire system.
- Fast response time within 25µsec
- Harmonic Orders Filtering Programmable From 2nd to 71st Orders.
- Programmable Static/Dynamic Reactive Power Correction
- Load balancing between phases and unload neutral wire
- Unique Hot-Swappable Modular design avoid full system shut-down
- 10-inch Graphical Colour LCD user friendly interface with icons and waveforms display.



PROGRAMMABLE OPEN/CLOSE LOOP CONTROL



Close Loop Control (Source Sensing)

Open Loop Control (Load Sensing)

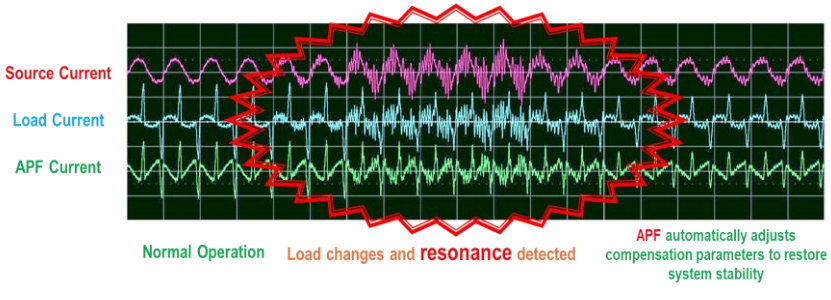
External auxiliary coupling current transformers (CT) are essential components in all active filter applications and depending on the point of coupling, it is generally classified as Close Loop control or Open Loop control.

Close Loop control (source sensing) require the external auxiliary CT to be coupled at the input supply source common to both the APF and the harmonic generating equipment.

Open Loop control (load sensing) require the external auxiliary CT to be located nearest to the point of common coupling in the direction of the harmonic generating equipment.

ABLEREX REAL-TIME RESONANCE DETECTION AND PROTECTION

The Enersine ESP Plus Active Power Filter (APF) incorporates Ablerex's advanced real-time resonance detection and protection technology. By continuously monitoring sudden load variations, the APF automatically adjusts its compensation parameters to eliminate resonance risks and ensure stable, reliable system performance.



SPECIFICATIONS

MODEL			ESP Plus 100	ESP Plus 150
ELECTRICAL	Maximum Compensating Current Per Phase*		$100A_{RMS}$ per phase	$150A_{RMS}$ per phase
	Maximum Neutral Compensating Current		3 times of compensating phase current	
	Maximum Scalable Current Per Cabinet		$800A_{RMS}$ (8nos. × $100A_{RMS}$ power module in Maxi cabinet)	$1,200A_{RMS}$ (8nos. × $150A_{RMS}$ power module in Maxi cabinet)
	Nominal Operating Voltage		208V/380V/400V/415V/480V (166V~525V)	
	Phase/Wires		208V /380V/400V/415V: 3 phase 3 wires or 4 wires (Selectable) 480V: 3 phase 3 wires only	
	Nominal Frequency		50/60Hz ± 5% (Auto Sensing)	
	Compensated Harmonic Orders		Global Mode: From 2nd to 71st order, including Even orders Selective Mode : Any order from 2nd to 71st orders	
	Target THDi % Setting		1%~10%	
	Target THDv % Setting		1%~10%	
	Efficiency		Typical ≥ 97%; ≥ 99% at Smart Save Energy mode	
	Compensation Rate		≥ 97%	
	Fast Response Time		< 25µsec	
	Full Response Time		<5ms	
	Power Factor Correction (Reactive Current)		Programmable from -1 to +1	
	Switching Frequency		20kHz~40kHz	
	Load Balancing		Both phase to phase and phase to neutral	
	Programmable Filtering Mode		1. Harmonic compensation only. 2. Power Factor (Reactive Current) compensation only 3. Harmonic compensation priority + Power Factor compensation 4. Power Factor compensation priority + Harmonic compensation 5. Harmonic compensation priority + Power Factor compensation + Load Balancing	
	CT Ratio		Programmable from 100A~10000A / 5A	
	CT Location		Programmable Close Loop Control (Source) or Open Loop Control (Load)	
	Inrush Current		Less than rated current	
	Current Limitation		Yes, limit at rated current	
	Maximum Heat losses At Full Capacity	208V	1070 Watts	1550 Watts
		400V / 480V	2060 Watts	3000 Watts
	Power Electronics		3-Level IGBT Technology	
	Cooling		Forced air cooling with speed-controlled fans	
COMMUNICATION	Display		10-inch Colour LCD Touch Screen Display	
	Interfaces		Ethernet (TCP/IP), RS-485 (Modbus RTU Protocol), 3x Output Dry Contact and 1x Input Dry Contact, 1x EPO	
PHYSICAL	Form Factor		Modules = Hot-Swappable in Cabinet Rack Mounting Design Cabinet = Floor Standing Design	
	System Parallel Quantity		Unlimited	
	Cabinet Dimensions, mm		(1) Midi: 650W x 900D x 1500H / Up to 4 modules max. (2) Maxi: 650W x 900D x 1950H / Up to 8 modules max.	
	Cabinet Protection Index		IP20, other IP options available upon request	
STANDARDS	Safety Standard		EN 62477-1	
	Electromagnetic Compatibility		EN 55011 Class A, EN 61000-6-4. EN 61000-3-12. EN 61000-3-11, EN 61000-6-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-34	
	Harmonic Standard		According to EN 61000-3-4, IEEE 519	
	Design Standard		According to EN 60146	

Specification subject to change without notice.
**the current rating may be derated automatically depending on load conditions for ambient temperature higher than 40°C*

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