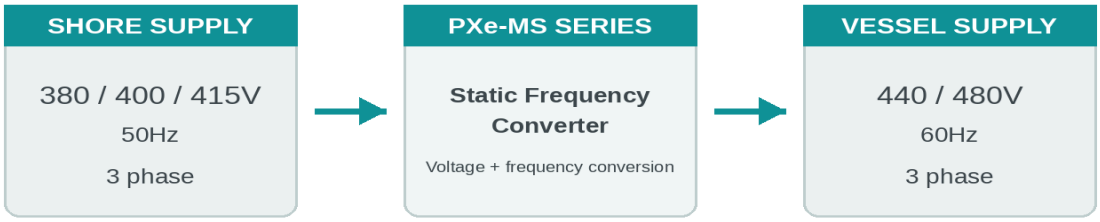
PXe-MS Series Marine & Shore Power Static Frequency Converters

Three-phase 50Hz and 60Hz voltage and frequency conversion for vessels, shipyards, dockside power and marine electrical systems.

PX Electronics PXe-MS Series Static Frequency Converters provide controlled three-phase voltage and frequency conversion where the available shore or facility supply does not match the vessel or connected marine equipment. Typical duties include 380V, 400V or 415V 50Hz to 440V or 480V 60Hz, together with reverse 60Hz to 50Hz conversion for internationally operated equipment.

Representative floor-standing PXe-MS Series enclosure.

Typical Marine Frequency Conversion



Common duties: 400V 50Hz -> 440V 60Hz | 415V 50Hz -> 440V 60Hz | 480V 60Hz -> 400V 50Hz

System configuration is selected around the available shore supply, vessel electrical system and connected load.

Power range	Frequency	Typical voltages	Phase	Application
1kVA to 500kVA	50Hz / 60Hz	380 / 400 / 415 / 440 / 480V	3P input / 3P output	Marine & shore power

Technical Highlights

Marine 50Hz and 60Hz Frequency Conversion	Both 50Hz to 60Hz and 60Hz to 50Hz conversion for vessel, shore and marine equipment requirements.
Common Marine Voltage Configurations	Typical three-phase voltages include 380V, 400V, 415V, 440V and 480V, with voltage and frequency conversion in the same system.
Continuous Static Power Conversion	Solid-state IGBT PWM conversion provides a regulated AC output without the mechanical wear associated with rotary converters.
Marine Load and Starting Current Capability	Converters are selected against the actual connected load, including motors, pumps, compressors and refrigeration equipment.
Shore, Shipyard and Vessel Applications	Suitable for fixed shore installations, shipyards, dry docks, marine workshops and onboard installations subject to environmental assessment.

System Configuration

The PXe-MS Series is configured around the incoming shore, dockside or facility supply and the voltage, frequency and load required by the vessel or marine equipment. Three-phase input and output arrangements are normally used, with voltage transformation incorporated where the source and load voltages differ.

Typical Marine Conversion Duties

Shore / Source Supply	Vessel / Equipment Supply
380V 3PH 50Hz	440V 3PH 60Hz
400V 3PH 50Hz	440V 3PH 60Hz
415V 3PH 50Hz	440V 3PH 60Hz
400V 3PH 50Hz	480V 3PH 60Hz
440V 3PH 60Hz	400V 3PH 50Hz
480V 3PH 60Hz	400V 3PH 50Hz
480V 3PH 60Hz	415V 3PH 50Hz
400V 3PH 50Hz	400V 3PH 60Hz

Other input and output combinations can be configured where the shore supply or vessel system differs from these common arrangements.

Power Rating and Load Assessment

Systems are available from 1kVA to 500kVA. The selected rating should be based on the maximum simultaneous load together with the starting characteristics of connected equipment. Marine installations often include motors, compressors, pumps and refrigeration systems that impose higher current during start-up than during normal running.

Input and Output Configuration

Input	Output	Isolation / transformation
Typical supplies: 380V, 400V, 415V 50Hz; 440V or 480V 60Hz. Other three-phase inputs available.	Typical outputs: 380V, 400V, 415V 50Hz; 440V or 480V 60Hz. Three-wire or four-wire arrangements by application.	Transformer isolation can be incorporated for galvanic separation and voltage conversion between shore and vessel systems.

Installation Environment

Converters can be supplied for protected shore-power plant rooms, dockside electrical areas, shipyards, marine workshops or suitable onboard machinery spaces. Ambient temperature, ventilation, humidity, salt-laden air and enclosure protection should be identified during specification. Higher enclosure protection and conformal coating options are available where required.

Marine classification or project-specific approval requirements should be stated at enquiry stage so that the compliance and documentation scope can be agreed before manufacture.

Technical Specification

Specification	PXe-MS Series
Rated Capacity	1kVA to 500kVA
Input Phase	Three phase
Output Phase	Three phase
Typical Input Voltages	380V, 400V, 415V, 440V, 480V AC
Typical Output Voltages	380V, 400V, 415V, 440V, 480V AC
Input Frequency	50Hz or 60Hz according to configuration
Output Frequency	50Hz or 60Hz according to configuration
Frequency Conversion	50Hz to 60Hz or 60Hz to 50Hz
Voltage Conversion	Input and output voltage configured for the application
Voltage Accuracy	<= +/-1% FS
Frequency Accuracy	<= +/-0.1% FS
Output Waveform	Pure sine wave
Total Harmonic Distortion	<=3% at linear load
Load Current Crest Factor	3:1
Input Power Factor	>=0.8 standard configuration
Overload Capacity	100% continuous; short-duration overload capability according to converter rating and configuration
Conversion Technology	Solid-state IGBT PWM static frequency conversion
Isolation	Transformer isolation according to configured system
Monitoring	Digital voltage, current and frequency indication; additional monitoring according to selected controller
Protection	Overcurrent, overload, overvoltage, overtemperature and short-circuit protection with alarms/status indication
Cooling	Forced-air cooling
Operating Temperature	-10C to 55C
Recommended Ambient	-10C to 45C
Humidity	10% to 90% RH, non-condensing
Altitude	Up to 1800m without additional derating unless otherwise specified
Connections	Hard-wired terminals, industrial connectors or application-specific connection arrangements
Enclosure	Industrial floor-standing enclosure according to rating and installation
Enclosure Options	Higher protection levels available according to installation requirements
Remote Control / Communications	Remote status, control and communications options available according to selected controller
Factory Testing	Functional factory testing as standard
Optional Testing	Application-specific FAT and third-party witnessed testing available

Ordering & Options

PXe-MS Series converters are configured to the vessel, shore supply and installation rather than supplied as a single fixed-voltage product. The model number identifies the phase arrangement and rated capacity, with the complete order code defining the electrical and enclosure configuration.

Order Code Structure

Element	Example	Meaning
Base model	PXe-330250-MS	Three-phase input / three-phase output, 250kVA Marine & Shore Power SFC
Input	3P400V50	400V three-phase 50Hz input
Output	3P440V60	440V three-phase 60Hz output
Capacity	250KVA	250kVA rated capacity
Enclosure	IP22 / IP54	Selected to suit the installation environment
Control	MC / remote option	Local control as standard; remote status/control options by project

Example complete order code

PXe-330250-MS-3P400V50-3P440V60-250KVA-IP22-RS485

Available Options

Alternative marine voltage configurations	380V, 400V, 415V, 440V and 480V combinations, including reverse 60Hz to 50Hz duties.
Higher-protection enclosure	IP54 or other project-specific enclosure arrangements where required.
Conformal coating	Additional protection for selected internal electronic assemblies in higher-humidity or potentially corrosive environments.
Neutral and wiring arrangement	Three-phase three-wire or four-wire outputs according to vessel distribution requirements.
Connections and cables	Hard-wired terminals, industrial connectors and application-specific cable assemblies.
Remote control and communications	Remote status, control and communications interfaces according to the selected controller.
Factory testing and witness	Application-specific FAT and customer or third-party witnessed testing.
Commissioning support	Available for larger or more complex systems where site integration and operating checks are required.

Information Required for Selection

Provide the available input voltage and frequency, required vessel/output voltage and frequency, continuous load, known starting or inrush current, load type, neutral arrangement, installation environment, enclosure requirement and any remote-control, testing or documentation requirements.