PRAXIS
AUTOMATION TECHNOLOGY

GreenInverter

GreenInverter

Features

Mega-Guard GreenInverter is an advanced and compact high power inverter system covering the following drive applications:

- Electric propulsion motor drive from DC Bus
- Generator drive and charging the GreenBatteries
- AC grid generation from DC Bus
- Shore power conversion and charging GreenBatteries

Mega-Guard GreenBatteries (electric energy storage) are connected to DC Bus. They are charged and discharged by Mega-Guard GreenInverters.

In case of grid generation and shore power conversion the GreenInverter is extended with a L-C-Transformer combination.

A GreenInverter is available in various current ranges and all of them support a DC Bus voltage up to 1000VDC and applications from 50kW up to 3000kW.

GreenInverters are available in 4 different housings from compact to medium size. DC Bus and AC cables are connected through EMC cable glands. Multiple cable glands are installed in larger sizes GreenInverter to support parallel cables for minimum copper use and user-friendly cable installation. Large size GreenInverters support busbar connection of DC Bus and AC side as well.

A GreenInverter with a capacity of 2000A is built up with 2x GreenInverter 1000A in parallel stack configuration and a 3000A rated GreenInverter is built-up with 3x GreenInverter 1000A in parallel providing controller redundancy as well.

High Power Inverter

Mega-Guard GreenInverter is equipped with various hardware inputs and outputs for external control and monitoring purpose. Advanced four quadrant inverter software is applied to support sensor-less control of electric motor RPM.

A high power GreenInverter is built-up with the following main components:

- Front contains an Operator Panel and EM Stop pushbutton
- Application programming in PLC IEC61131 language
- Inverter controller with advanced four quadrant motor control software and hardware drivers for the IGBT's. Including integrated safety functions.
- IGBT's mounted on water cooling block
- DC Bus capacitors
- Powered by 24VDC
- Input and output connections: 2 x Ethernet, 8x temperature input, 1x position feedback input, 1x EM stop input and various serial ports I/O; including NMEA, MODBUS (RS485), J1939 or CAN Open

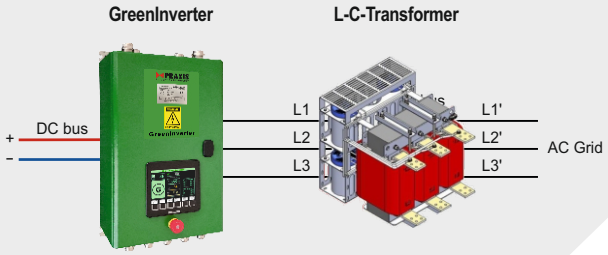
GreenInverter HPI-450A

GreenInverter specification		
GreenInverter models:		Continuous AC current:
HPI-450A		450A
HPI-1000A		1000A
HPI-2000A		2000A
HPI-3000A		3000A
Maximum busbar voltage		1000VDC
Efficiency		98%
Control Software		Four quadrant with sensor-less motor and generator control
Applications		Motor control, Generator control, Grid generation, Battery charging, Shore power conversion
Front		5.7" Touchscreen with 6 pushbuttons EM Stop pushbutton
Application programming		PLC IEC61131
Application graphic editor		✓
Local operation		✓
Switching frequency		1 – 10kHz
Output frequency		0 – 1000Hz
DC cabling	450A 1000A 2000A 3000A	2x up to 240mm² EMC cable glands A 95mm² EMC cable gland is installed for each 250A current in parallel
AC cabling	450A 1000A 2000A 3000A	3x up to 185mm² EMC cable glands A 95mm² EMC cable gland is installed for each 250A current in parallel
DC Bus capacitor	450A 1000A 2000A 3000A	up to 840uF up to 6000uF up to 12000uF up to 18000uF
IO cabling		7x EMC cable gland
Motor temperature inputs		6x KTY winding temperature 2x PT1000 bearing temperature
Emergency stop input		1x external emergency stop
Position feedback input		✓
Optional IO		✓
Ethernet ports		2x
Serial ports		NMEA, Modbus (RS485), J1939 or CAN open
AC short circuit protection		✓ Safe Torque Off
DC short circuit protection		✓ Safe Torque Off
Overvoltage protection		✓

Specification

GreenInverter specification continued		
Overspeed protection		✓
Overtemperature protection		✓
Power supply		24VDC (-25% ~ +30%)
Power supply consumption	450A	35W
	1000A	75W
	2000A	150W
	3000A	225W
Earth fault		✓
Mounting		Bulkhead
Weight	450A	28kg
	1000A	58kg
	2000A	110kg
	3000A	165kg
Dimensions	450A	300x500x200mm (WxHxD)
	1000A	400x1000x300mm (WxHxD)
	2000A	800x1000x300mm (WxHxD)
	3000A	1200x1000x300mm (WxHxD)
Protection		IP66
Coolant medium and temperature		Water/glycol up to 35°C inlet temp. Derating above 35°C: 2% per °C
Coolant pressure drop	450A	0.1 bar at flow of 10l/min
	1000A	0.25 bar at flow of 25l/min
	2000A	0.25 bar at flow of 50l/min
	3000A	0.25 bar at flow of 75l/min
Ambient temperature		5 ~ 55°C
Environmental conditions		IEC60945
Class approval		LRS, DNV-GL, ABS, BV, CCS and risk based assessment

GreenInverter Operator Panel



DC Bus to AC grid conversion

GreenInverter dimensions

PRAXIS
AUTOMATION TECHNOLOGY

Vessel
Management System

Power
Management System

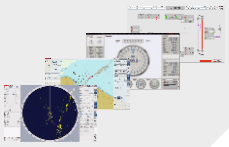
Fire
Alarm System

CCTV
Video Distribution

Ship
Performance Monitor

Fleet
Management System

Integrated
Navigation System



Heading
Control System

Propulsion
Control System

Dynamic
Positioning System

BNWAS
Watch Alarm System

Navigation
Light Control

Wiper
Control System

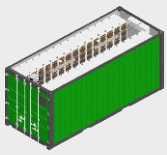
Energy
Management System

GreenAzithruster

GreenGenerator

GreenInverter

GreenBattery
Container



GreenBattery

GreenMotor

Ship automation,
navigation and
electric propulsion

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