

Green Inverter



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 the GreenBatteries
- ▶ DC/DC conversion

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

A GreenInverter is available in various current and voltage ranges: from maximum current 225A to 1400A and a maximum voltage of 800VDC or 1000VDC. In addition, a Mega-Guard GreenInverter is available in 2 different housings:

- ▶ Compact housing: up to 450A with single high voltage cables for DC bus and 3 phase AC voltage
- ▶ Extended housing: up to 1400A with dual high voltage cables for DC bus and 3 phase AC voltage

The EMC cable glands for the high voltage cables are suitably sized to support large cable diameters.

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:

- ▶ Operator Panel with built-in Control Processor and GreenInverter application programming in IEC61131 language
- ▶ Inverter controller with integrated safety functions and advanced four quadrant motor control software
- ▶ 3x IGBT up to 1400A for 3 phase AC motor/generator driving
- ▶ DC Bus capacitors
- ▶ Water cooling circuit for cooling the IGBT's and internal electronics



GreenInverter specification

GreenInverter models: HPI-225A-800VDC HPI-225A-1000VDC HPI-450A-800VDC HPI-450A-1000VDC HPI-900A-800VDC HPI-900A-1000VDC HPI-1400A-800VDC HPI-1400A-1000VDC	Continuous current and voltage: 225A/800VDC 225A/1000VDC 450A/800VDC 450A/1000VDC 900A/800VDC 900A/1000VDC 1400A/800VDC 1400A/1000VDC
Efficiency	98%
Control Software	Four quadrant with sensor-less motor and generator control
Applications	Motor control, Generator control, Grid generation, Battery charging, DC/DC conversion
Switching frequency	1 – 10kHz
Output frequency	0 – 1000Hz
DC cabling 225A/450A 900A/1400A	2x up to 240mm ² EMC cable glands 4x up to 300mm ² EMC cable glands
AC cabling 225A/450A 900A/1400A	3x up to 185mm ² EMC cable glands 6x up to 240mm ² EMC cable glands
IO cabling	7x EMC cable gland
DC Bus capacitor	300uF to 1800uF
Motor temperature inputs	6x KTY winding temperature 2x PT1000 bearing temperature
Emergency stop input	1x external emergency stop knob
Power supply	24VDC (-25% ~ +30%)
Power consumption	35W
Mounting	Bulkhead
Weight 225A/450A 900A/1400A	28kg 52kg
Dimensions 225A/450A 900A/1400A	300x500x200mm (WxHxD) 600x800x400mm (WxHxD)
Protection	IP66
Coolant medium and temperature	Water/glycol up to 35°C inlet temp. Derating above 35°C: 2% per °C
Coolant 225A/450A pressure drop 900A/1400A	0.1 bar at flow of 10l/min 0.25 bar at flow of 25l/min
Ambient temperature	5 ~ 55°C
Environmental conditions	IEC60945
Class approval	LRS, DNV-GL, ABS, BV, CCS and risk based assessment

Specification

GreenInverter Operator Panel

Front	5.7" Touchscreen with 6 pushbuttons
Ethernet ports	4x
NMEA or RS485	2x
Application inputs / outputs	2x digital input 1x relay output 2x potentiometer input
Application programming	PLC IEC61131
Application graphic editor	✓
Local operation	✓

GreenInverter J1939 / CAN Open (optional)

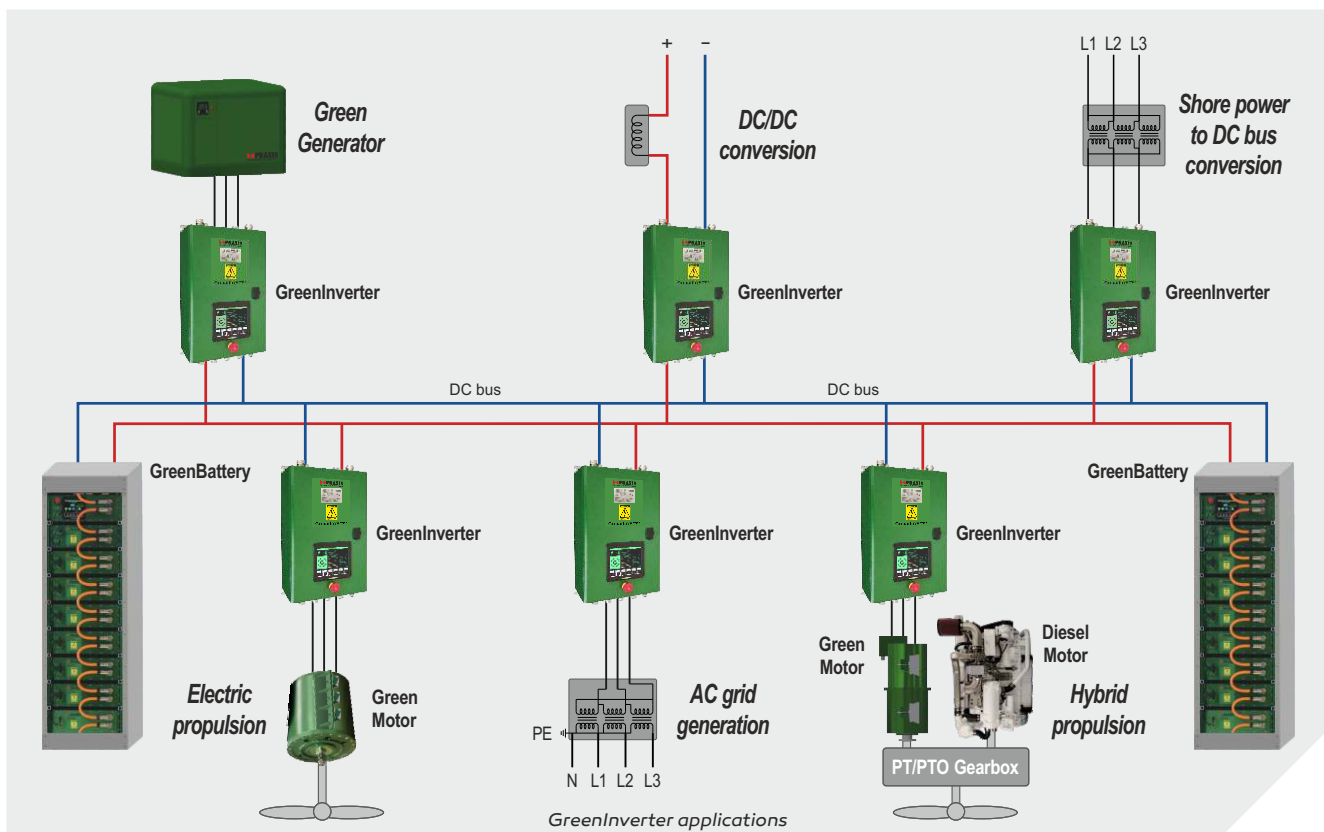
Application port	J1939 standard or CAN Open standard
Ethernet ports	4x

GreenInverter safety

AC short circuit protection	✓ Safe Torque Off
DC short circuit protection	✓ Safe Torque Off
Oversvoltage protection	✓
Overspeed protection	✓
Overtemperature protection	✓
Earth fault	✓



Mounting & dimensions



Vessel
Management System



Power
Management System



Fire
Alarm System



CCTV
Video Distribution



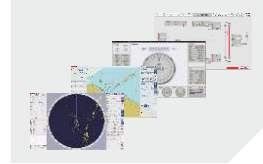
Ship
Performance Monitor



Fleet
Management System



Integrated
Navigation System



Heading
Control System



Propulsion
Control System



Dynamic
Positioning System



BNWAS
Watch Alarm System



Navigation
Light Control



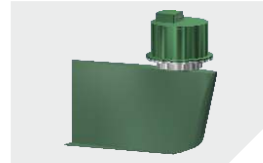
Wiper
Control System



Energy
Management System



Electric Fin
Stabilizer



Electric
Steerable POD



GreenInverter



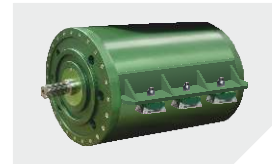
GreenGenerator



GreenBattery



GreenMotor



*Ship automation,
navigation and
electric propulsion*