



MPI-1600 MODULAR SINE WAVE INVERTER / CHARGER

The new modular inverter system only available from RIPEnergy will include one or several (up to 32) 2kVA/1.6kW inverter modules. N+1 is secured while every inverter/charger unit is independent. So we are able to offer Inverter/Charger Systems from 1.6kW to 50kW in one Phase or 3-Phase configuration. Further more the fully programmable inverter/charger modules can be configured for 230VAC/50Hz and 100VAC/60Hz Systems using the same hardware. The inverter modules offering a fully bidirectional function. The revolutionary technology enables to direct the Energy in any direction without Interruption. While AC-Power is available from a generator or grid, the batteries are charged at the same time. The AC-consumer have always first priority.

One supervisor unit is required in the system. The supervisor device can manage up to 32 modules. It communicates with each inverter module through a proprietary protocol on a RX/TX bus. With the supervising unit the system can be programmed, controlled and it serves as communication unit for external CAN-Bus, Ethernet and other protocols to integrate the inverter/charger system to the operating system of your project.

An optional „Battle-Switch,, enables the operator to reduce the protection functions of the system. In a real emergency the system can be operated beyond the normal limiting factors to ensure power as long as possible.

Each inverter/charger module is placed inside an IP65 enclosure.



Pure Sinewave



Charger



High frequency technology



Light weight, compact size



Full electronic protection



Extended temperature range



Waterproof IP65



Two Alarm relays contacts



Optional Remote control

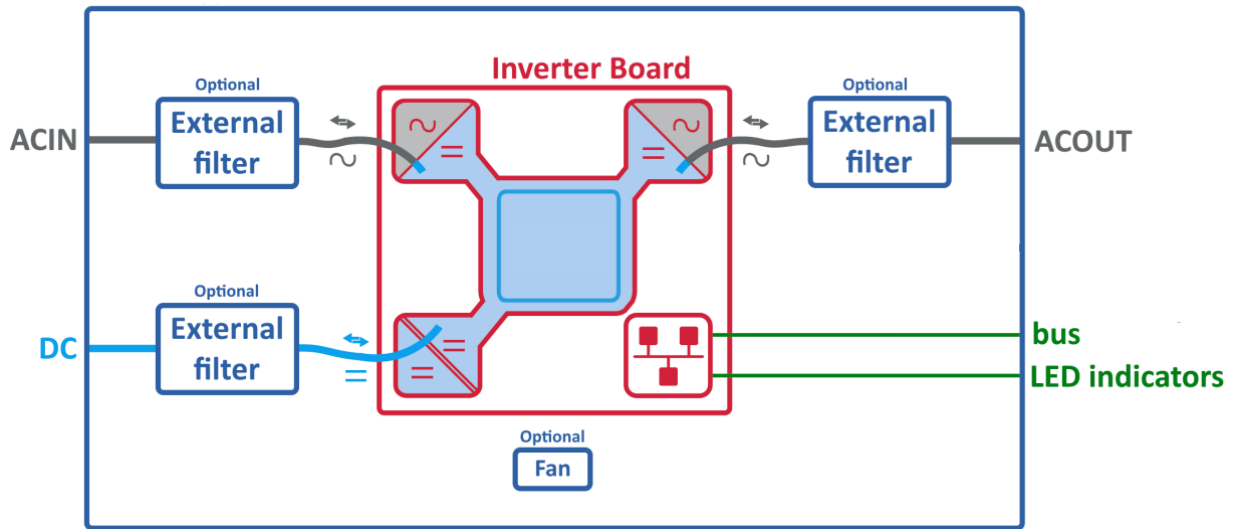
APPLICATIONS

- Military Applications (COTS)
- All mobile MIL applications as tanks and trucks
- Shelters and other building equipment
- Marine & other demanding environments

FEATURES

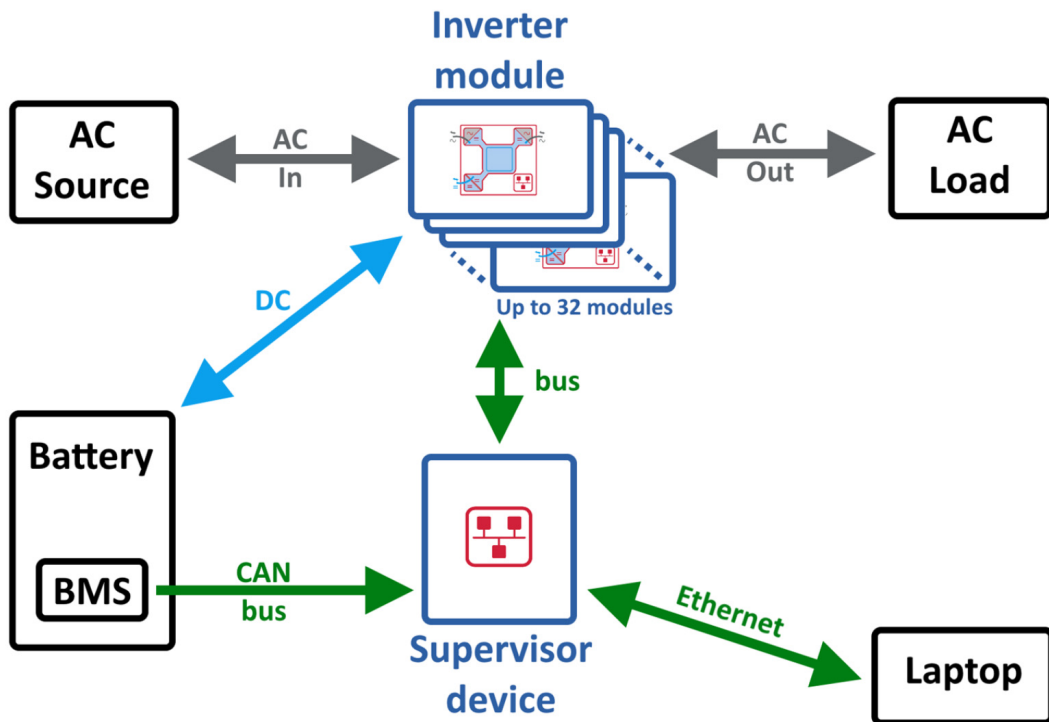
- 1600W of pure sine wave output power
- High performance battery charger
- Uninterruptible AC-Power due to patent technology
- Generator support
- USB power outlet 5V/1A
- MIL STD 461F
- Ruggedized parts of MIL STD 810G
- Parts of MIL STD 1275
- Waterproof IP65
- Environmentally Tolerant
- Vibration resistant
- Operating Temperature -20 to +60°C
- Full electronic protection
- Compact size, light weight
- Flexible design (connectors, shape)
- Field-proven design topology
- Battle-Switch
- „Flat-Battery“ startup

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Block diagram of the modular 1.6kW inverter module

This inverter module allows direct transfer from the AC source to the DC source (or the opposite) without any delay and without the use of a mechanical transfer switch.



Modular inverter system

This block diagram shows a 1-Phase configuration (one AC source). Another available configuration is 3-Phase configuration. In 3-Phase configuration, up to 32 inverter modules could be randomly distributed between phases. One parameter in the supervisor device is used to determine on which phase each inverter module is connected.

SPECIFICATIONS

		Min	Typ	Max	Comment
DC Input					
Nominal Voltage	Vdc	16	28	32	Power derating below 22Vdc, 50% at 16Vdc, 100% at 22Vdc during 2 minutes
Nominal current at 28Vdc	A		61.4		
Current overload (for 15 seconds)	A			TBD	
Under-voltage protection turn ON	V			18	Adjustable
Under-voltage protection turn OFF	V	16			Adjustable
Under-voltage protection hysteresis	V		2		Minimum 2V is recommended
Idle power	W			TBD	AC Input not connected AC Output OFF
Standby power	W			3	Per Inverter
Revers polarity protection		Yes			
AC Input					
Nominal Voltage	Vac	90	230	295	Line to neutral. Derating on components not guaranteed above 265Vac. Power derating below 125Vac.
Max. current at 125Vac	Arms		16		Nominal current 8.7 at 230Vac
Under-voltage protection turn ON	Vac			160	Adjustable
Under-voltage protection turn OFF	Vac	150			Adjustable
Frequency – 50 Hz / 60 Hz	Hz	47 / 57		53 / 63	Synchronisation range
Power factor		0.99			Above 50% load
Input Current THD	%			3	At 0% Grid Voltage THD
AC Output					
Nominal voltage	Vac	100	230	240	Adjustable. Power derating below 125Vac
Frequency (inverter mode)	Hz		50 / 60		
Frequency stability (inverter mode)	%		± 0.03		
Power permanent	kVA			2	
Power overload (15 seconds)	kVA			3	150% max power
Short circuit current with AC Input	Arms			109	For 20msec
Short circuit current on battery	Arms			22.5	For 15 seconds
Voltage THD	%			1.5	Resistive load
Load Regulation	%		± 5		For (10% - 90% - 10%) step load change
Line Regulation	%		± 2		For any change in input voltage
Voltage stability	%	-2		2	From 10 to 100% load
Efficiency AC to AC	%	96			25°C, Vin and Vout typical, above 50% load
Efficiency DC to AC	%	93			25°C, Vin and Vout typical, above 50% load
Admissible load power factor	Full power rating from 0.8 inductive to 0.8 capacitive				

SPECIFICATIONS

		Min	Typ	Max	Comment
Electrical Specifications Charger					
AC- Input Voltage	Vac	90	230	295	
Frequency – 50 Hz / 60 Hz	Hz	47 / 57		53 / 63	
Absorb Voltage	Vdc	22	28	32	Adjustable
Float Voltage	Vdc	22	27.2	32	Adjustable
Charging Power	kW			1.6 ⁽¹⁾	Adjustable AC Output has higher priority
Charge Characteristics			TBD		5-stage (bulk, absorb, float, silent, manual)
General					
Operating Temperature	°C	-20		60	Derating above 50°C
Operating relative humidity	%			95	Non-condensing
Storage Temperature	°C	-50		70	
Storage relative humidity	%			95	Non-condensing
MTBF	h		100'000		@ 75% load and 30°C
Indicators	Trichromatic LED				
Alarm Output	Two independent programmable relays contacts				
USB Connector	5V -5%/+10% , 1A				
Battle-Switch	The inverter works in the emergency program without the usual Over-, Undervoltage Overcurrent and Overtemperature limits.				
Safety & EMC & Reliability					
Electrical Safety	EN60950				
Reliability	MIL-HDBK-217				
EMC	CISPR22 Class B, EN-IEC 61000-3-2 Class A, EN-IEC 61000-4-2 , EN-IEC 61000-4-6 Level3, VG95373, MIL-STD-1275E MIL-STD-461G CS101, CS114, CS115, CS116, MIL-STD-461G RE101, RE102, RS103				
Environment	MIL-STD-810G				
Dielectric isolation DC/AC	V	4300			
Dimensions & Mass					
Inverter module	mm	650x280x94			
Weight	kg	14			
Control unit	mm	240x100x60			
Weight	kg	TBD			
Connectors		DC Input: CAN CA3102E24-9PB111 AC Input: CAN CA3102E16-10PB AC Output: CAN CA3102E16-10SB Communication: ASX RJFTV21G			

(1) AC output load has higher priority. If AC load is 1 kW, DC power maximum is lower depending on AC input voltage.

