WM Series Inverters for Telecommunications

Power Systems International Ltd announces six new low power inverters of 500VA and 1000VA capacity from its' successful Miniverter rack mounting series.

The Miniverter WM (wave shaped modulated) series 1600 inverters is a compact, rugged design for use with mobile or fixed station 19" or 23" communications rack installations for all types of telecommunications and broadcasting service applications.

This inverter range is available for use with 48V DC battery installations but models are available for 24V DC and 120V DC operation. Output is 230V 1 phase 50Hz and 120V 1 phase 60Hz models are also available.

Enclosure class is IP20, each model occupies only 2U of vertical rack space. Natural ventilation by convection cooling is used in the design as the generated heat is low due to the high efficiency eg. 88% for the 1000VA model.

Operation at an ambient temperature of 50°C can easily be accommodated in the standard model without the need for derating.

A novel on line/standby option is available through an automatic bypass mode feature. In standby mode (L) the bypass circuit mains line feeds the load and the inverter operates in "Synch Standby" with mains and draws only 1 Amp from the station battery. Upon loss of mains supply, the auto bypass transfers the load to the inverter, the station battery supplies the inverter and the critical load. The inverter is always connected to the station battery hence there is no interruption or disturbance to the critical load during the bypass transfer function.

The operational noise level of the inverter is hardly audible at 50dBA and at a weight of about 10kg this is a compact, lightweight rack mounting unit with impeccable credentials for performance and reliability.

POWER SYSTEMS INTERNATIONAL

WM Series 1650 Inverters

500VA and 1000VA, 50Hz or 60Hz

For mobile and base station communications, avionics, naval and other defence security applications where a rugged industrial construction is demanded.

- **2U high**
- **19" and 23" rack enclosure mounting**
- **High efficiency**
- **Convection cooled**
- **Light weight**
- **Multi mode operation**
- **Audible noise level <50dBA**
- **High crest factor, non-linear load handling capability**

The WM Series of rack mounting inverters in sizes 500VA and 1000VA requires only 2U of 19" rack space. Output voltages 230V or 120V, 50Hz or 60Hz with standard input voltages of 24, 48 or 120V DC from battery power sources, station batteries or from separate rectifier modules.

The precisely regulated output voltage and frequency, with quasi sinusoidal output is well suited for powering sensitive communications equipment and data processing system loads including switch mode devices and small motors.

The inverter design is highly efficient, conservatively rated, light weight with compact dimensions and can operate in an ambient temperature of up to 50°C without de-rating.

An interesting, novel feature available on the WM Series inverter is an "active on-line" mode, continuously feeding AC power to the load. The inverter can be supplied for "passive stand-by" mode where the load is fed via the bypass circuit and upon mains failure the inverter draws power from the battery to provide interruption free power to the load.

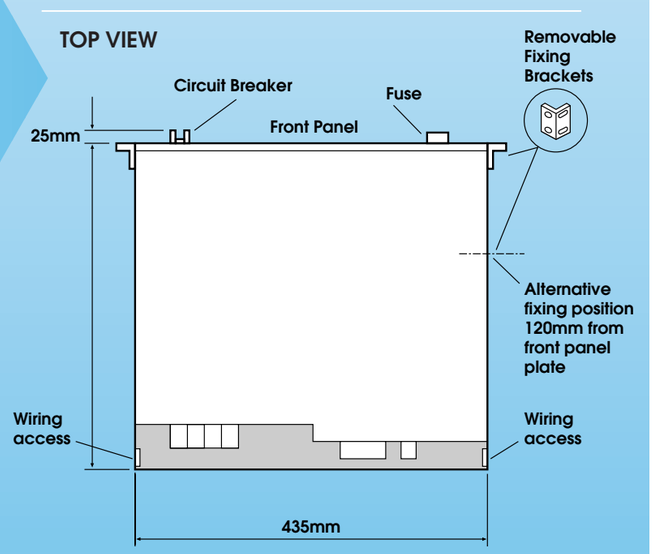
The optional "passive stand-by" mode is an economy feature, especially important in telecommunications applications because little DC power is taken from the battery in normal use.

Specification

Input voltage	As shown in the selection table
Current	As shown in the selection table
Output	230V 1 Phase + neutral, 120V option
Output frequency	50Hz +/-0.15Hz, 60Hz option
Capacity	Rated VA at 0.8 Power Factor
Output voltage regulation	+/-3% from no load to full load over input voltage range
Output waveform	Quasi sine wave with regulated RMS and peak voltages
DC input filter	C message weighted, noise reflected into typical battery source <32dBmC, meets CCITT prescriptions
Environment	Dust free, damp free in well ventilated enclosure where ambient temperature does not exceed 0°C to 50°C
Audible Noise	<50dBA at 1 metre

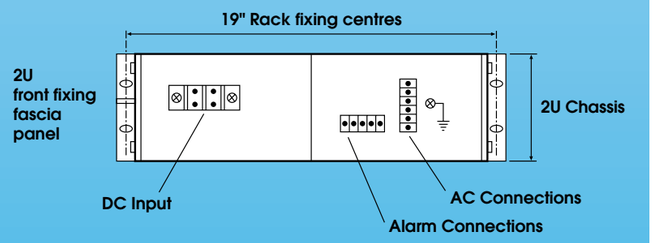
Dimensions

TOP VIEW



REAR VIEW

With Terminal Covers Removed



WEIGHTS

500VA 17kg
1000VA 11kg

OPTIONS

- 3U aluminium front fascia plate with handles
- 2U power management and by-pass module supplied with LED status indicating mimic or with metering
- 2U rectifier charger modules up to 50A 48V, 24V and 110V versions available
- Fully integrated rack enclosures fitted with rectifier, inverter bypass and batteries available
- Special execution Miniverters are available with seismic qualification for Nuclear Power Stations and defence vehicle installation
- Interconnection cables between modules fitted with industrial grade plugs and socket arrangement

Miniverter® is a registered trade mark of Power Systems International Limited

Selection Data

	Nominal Input V DC	Input Range V DC	Input Current No Load A DC	Input Current Full Load A DC	Efficiency %	Heat Output Btu/hour	Model WM
500VA	24	21-29	0.58	29.0	82	375	1653-24
	48	42-58	0.35	14.0	85	290	1653-48
	120	105-140	0.15	5.7	83	335	1653-120
1000VA	24	21-29	0.33	55.0	87	529	1654-24
	48	42-58	0.16	26.9	88	443	1654-48
	120	105-140	0.09	10.5	91	350	1654-120

NOTES

1. No load input current is typical at nominal input voltage.
2. Input current, efficiency and heat output are typical at full load and at minimum input voltage.
3. See specification for model numbering suffix details.

Protection

Protection against short duration overloads and accidental short circuit of the output is provided electronically. Recovery is automatic upon removal of the fault condition.

Where overload or short circuit conditions are sustained for 10 seconds the electronic protection will trip the front panel circuit breaker which is in series with the DC input. This circuit breaker also provides protection against accidental reversed input voltage polarity during installation.

The 48V DC input inverters have the circuit breaker installed in the -ve DC input line, whilst the 24V and 120V input units have the breaker in the +ve DC line.

The inverter will automatically shut down if subjected to a DC input undervoltage condition and will restart and revert to normal operation upon restoration of input voltage within the prescribed limits.

Excessively high input DC voltages and repetitive cyclic peak voltages outside the prescribed limits will eventually trip the front panel circuit breaker.

Controls and Indicators

A combined circuit breaker and on/off switch is provided on the front panel. This switches the input DC power to the inverter.

The WM Series inverter, suffix "U" are provided with an AC line fuse in the bypass circuit and the inverter operational status is indicated by LED's.

Mechanical Construction

The Miniverter enclosure is constructed from a press formed steel frame, the top and bottom covers are made from plated and perforated aluminium. The optional front panel is made from heavy gauge aluminium.

Terminals are provided on the rear panel and a protective cover is fitted for safety.

When used in conjunction with the separate Miniverter Power Management and Bypass Module, an optional plug and socket arrangement with flexible cables can be provided.

STANDARD CONFIGURATIONS

Miniverter WM Series, “U” version

In this mode the load is normally powered by the inverter “active on-line”. If the inverter output is degraded, the bypass circuit will be initiated to transfer the load from the inverter to the AC power source.

The transfer of a critical load to the bypass AC power source will not be detected even by highly sensitive loads.

Upon restoration of power from the inverter, the inverter will stabilize its output against a logic reference and after about 4 seconds will reverse transfer the critical load from the bypass unit to the inverter.

Auxiliary contacts are provided for signalling alarm conditions and status to remotely located mimic panels, building management systems and control rooms. The operational status of the inverter is also shown on the LED’s on the front panel.

Miniverter WM Series, “L” version

The inverter operates in a “passive off-line” mode on standby whilst the critical load is fed through the bypass circuit from the AC power source i.e. “mains line”.

The inverter is connected to the battery source and its quiescent current on no load is less than 1 Amp to keep the logic fully operational. Hence in this mode the battery in the communications station remains fully charged and the rectifier would not have to be sized to support the permanent current as drawn from the battery by the on line “U” version. Upon loss of input mains, or where the AC line voltage and/or frequency are out of tolerance, the inverter will operate from the station battery

High power industrial inverters

Inverters with 48V DC input are available in single phase output from 3kVA to 30kVA and three phase output from 7.5kVA to 50kVA - details on request.

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