MINDTRAC
POWER

Power
for all your needs

C SERIES

DSP Sine Wave Inverters

Range from 5 KVA - 100 KVA

WARRANTY 24 MONTHS

C SERIES

MINDTRAC POWER products are manufactured by factories with ISO 9001-2000 and the products conform to national and inter national standards and certification such as UL, CE and ISO 14001-2004 for Environment Friendly production.

The Factory's success is its in-house R&D focus which has helped it to secure 20 product patents with another 10 in the pipeline .

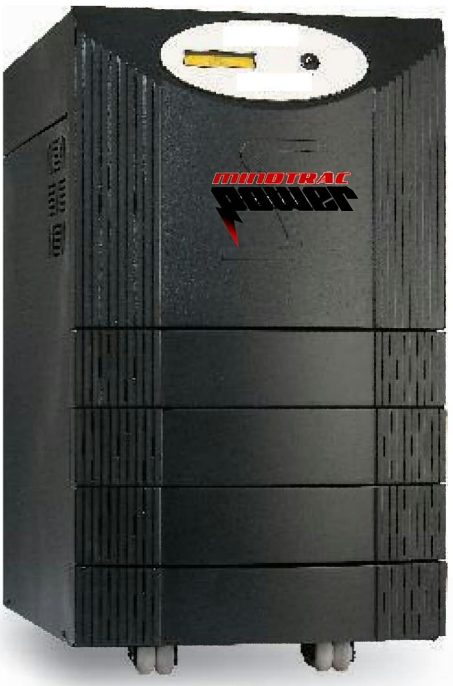
MINDTRAC POWER

E SERIES

DSP Sine Wave Inverter

Typical Applications

- Banks/ATM's
- BPOs/Call centers
- Data Centers
- Deep Freezers
- Elevators & Escalators
- Hospitals
- Restaurants and Hotels
- Industrial Drives & Motors
- Laboratories
- Petrol Pumps
- Clubs, Pubs and Discotheques
- Schools/Educational Institutions
- Super Markets/Shopping Malls
- Telecom Towers
- Textile Industry



24 Months Warranty

ESTABLISHED SERVICE SUPPORT

C SERIES

DSP Sine Wave Inverter

The latest Technology for Heavy Duty Usage Ideal for all types of commercial establishments, MINDTRAC POWER'S C Series – DSP Sine Wave Inverter–is a complete power generation system that runs all your expensive and sensitive office/ industrial equipment in the most cost effective manner .

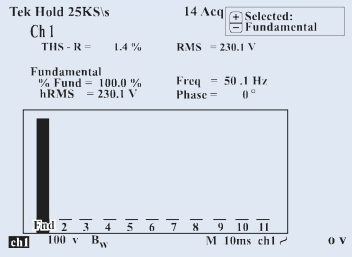
100 % Pure, Reliable and Regulated Power

MINDTRAC POWER Heavy–Duty Inverter – C Series produces Pure Sine Wave– Clean Power . Digital Signal Processing (DSP), the world most advanced technology (meant for high–speed data processing), in conjunction with Sine Wave Technology delivers output which is completely stable and distortion free (Total Harmonic Distortion <3%). This power is actually purer than power supplied from the grid. This makes it absolutely safe to r un even the most sensitive equipment.

apt for heavy duty usage and are available in a wide range of capacities to suit individual requirements.

Range from 5 KVA to 100 KVA

TOTAL HARMONIC DISTORTION GRAPH



C SERIES

- Absolutely Safe for Sensitive Equipment
- Heavy Duty Usage

Absolutely Safe for Sensitive Equipment

Today, offices and other commercial establishments use some of the most expensive and sophisticated electronic equipment. These new generations equipment has advanced circuitry which needs 100% pure power , free of spikes and surges.

The importance of pure power is very apparent to anyone who has faced malfunctioning of sophisticated electronic equipment. Some examples of when equipment needs pure sine wave power are

- Performance of power tools that employ solid state circuitry to operate variable speed control
- Devices that use a microprocessor to control motor speed or control voltage output to power the device.
- Medical devices and equipment needed for critical operations.
- Laboratory apparatus where preciseness is of utmost importance
- Fluorescent and ballast operated lighting.

The power produced by MINDTRAC POWER Sine Wave Inverter - C Series is actually purer than power supplied from the grid. This makes it absolutely safe to r un even the most sensitive equipment.

Heavy Duty Usage

MINDTRAC POWER DSP Sine Wave Inverter - C Series, available as standard as well as customized solutions from 5 KVA to 100 KVA, are ideal for all types of commercial establishments like Offices, Showrooms, Shopping Malls, Hospitals, Hotels, Schools, Labs, Petrol Pumps, Banks, Telecom Towers, A TMs and BPOs etc., and are capable of running everything from Lights to Air Conditioners to Lifts and Elevators.

- Pollution Free
- Ease of Operation
- Low Running Cost
- Easy to Install

C SERIES

Pollution Free

Unlike a generator , MINDTRAC POWER DSP Sine Wave Inverter - C Series runs on batteries therefore, is completely Non- Polluting – No fumes, No noise, and can be comfortably placed in any working environment

Ease of Operation

MINDTRAC POWER DSP Sine Wave Inverter - C Series automatically switches on to the batter y mode during a power cut thereby save you the hassle of manually star ting the system. Therefore, there is No Time Gap (Star t up delay) between power cut and resumption of back-up power . Also, it does not need inflammable fuel to be stored, restocked and poured.

Low Running Cost

MINDTRAC POWER DSP Sine Wave Inverters- C Series produces power – as per the running load i.e . it draws only the required amount of power from the battery , thereby has low running cost. Also, lower load means higher back up & hence higher durability of Batter y . While, in a generator running cost i.e . fuel consumption with smaller load or higher load remains almost same, hence is more expensive.

Easy to Install

MINDTRAC POWER DSP Sine Wave Inverter s- C Series can be connected to any three phase supply (single phase units also available). Also, with no vibrations, low footprint and dimensions these Inverter s can be easily installed anywhere….on any floor . (Subject to Battery capacity to be installed)

MINDTRAC POWER

C SERIES

- Easy to Maintain
- High Efficiency and Reliability
- Advanced Communication

Easy to Maintain

Since an inverter has no moving parts (it is based on digital technology), it involves almost zero maintenance. A generator on the other hand is based on internal combustion technology , and requires regular maintenance.

High Efficiency and Reliability

The technology used and the choice of high performance components mean that MINDTRAC POWER DSP Sine wave Inverter - C Series can obtain exceptional performance and efficiency levels, from very low footprint and dimensions.

Advanced Communication

MINDTRAC POWER DSP Sine Wave Inverter - C Series is equipped with a LCD display which provides information regarding status, remedial actions needed, battery level, load level etc.

In addition to this, all MINDTRAC POWER DSP Sine Wave Inverter s- C Series come pre-loaded with :

- Power Manager- for auditing power quality , capable of initiating SMS, e-mail alerts, and managing scheduled shutdown.
- Powerdoc- Web Based Software for Remote Monitoring of Inverter without using SNMP hardware.

(For details on these softwares, please see page 13)

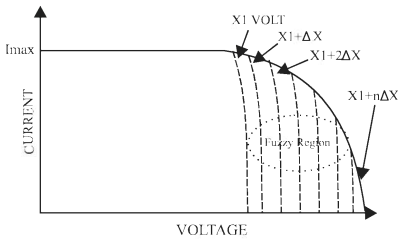
- Battery Care System
- Extended Power Back-up Time

SERIES

Battery Care System

Traditionally, when a mains supply is present the inverter charges its batteries. Battery power is used by the inverter, when the input supply fails. Efficient battery management and care is therefore essential to the overall performance of the inverter in an emergency. MINTRAC POWER DSP Sine wave Inverter - Colossal Series consists of a range of features designed to optimize battery performance and enhance battery life

- Compatible with different battery technologies like VRLA (Sealed Maintenance Free) and Flooded Lead Acid
- Fuzzy Logic Control Battery Charging- i.e. charging current regulated according to the battery voltage to increase battery life



- Deep discharge batter y protection to reduce overall batter y aging
- Batter y pole reversal protection
- Display of batter y load level on LCD panel

MINDTRAC POWER Power Bank series of Batteries are specially designed for optimum performance,very long life, and high reliability. These are eminently suitable for a wide range of applications MINDTRAC POWER DSP Sine Wave Inverter - Colossal Series has an option of increasing the number of batteries to increase the back-up power , according to individual requirements.

C SERIES

- Soft Start Technology
- Cold Start
- Compatibility

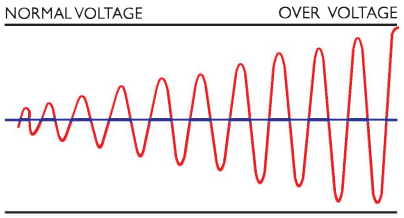



Soft Start Technology

MINDTRAC POWER DSP Sine wave Inverter - C Series incorporates Soft Start Technology , which does not allow high startup currents from large inductive loads to shut down the inverter . Soft Star t improves inverter operation. Major Soft Star t features are:

- Gradual voltage ramp-up during inverter startup. This eliminates failed cold starts under load.

- Output that momentarily dips in voltage and quickly recovers to allow large motorized loads to star t. This eliminates almost all shutdowns from momentary overloads.



Cold Start

The Cold Star t function of MINTRAC POWER DSP Sine Wave Inverter - C Series enables the user to star t the inverter in Batter y mode, even in the absence of power from the mains (Grid Power).

Compatibility

MINTRAC POWER DSP Sine Wave Inverter - C Series has a unique advantage of being compatible with your exiting generator i.e . it can charge batteries from grid (Mains) power as well as power produced by generators. Also, this inverter can be integrated with solar power to charge the batteries by using external solar charge controller .

Extended Overload Capability

Unbalanced Load Handling Capability

Power Quality

Electronic equipment function properly as long as they are running on high quality power. These factors may occur externally or internally. Depending on the event, the power quality disturbances may vary in type, duration and intensity. Major power supply disturbances causing bad effects on your equipment are listed below :

H SERIES

Power Outage:

Power Intruption for more then 3s is called an outage or commonly Blackout.

Consequences

Computer applications : Complete System shutdown with loss of data. Possible hardware damage.

Industrial applications :

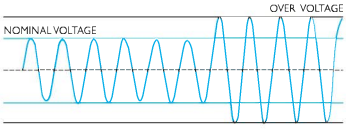
Effect on production activity with consequent production loss or unexpected safety consequence.

Over voltage :

It's an increase in voltage for a time of more than 10 ms and may be caused by disconnection of major loads or natural events such as lightning.

Consequences :

Faults in all electric/electronic equipment



Undervoltage :

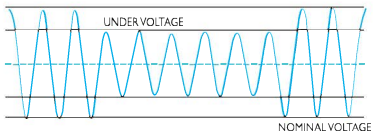
It's a voltage reduction in amplitude for a time between 10ms to 1s. expressed as a percentage from 10 and 100% of the rated voltage.

Consequences

Computer applications : Overheating of the electronic components with consequent operational breakdown.

Industrial applications :

Instability of asynchronous motors and loss of synchronisation of synchronous motors, opening of contactors with subsequent return of power after several minutes and consequent operational breakdown.

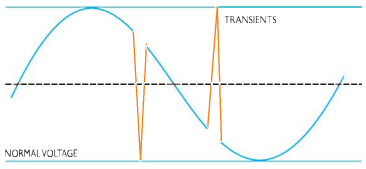


Transients :

These are rapid, very high over voltages of upto 20 kV

Consequences :

Destroy inadequately protected equipment

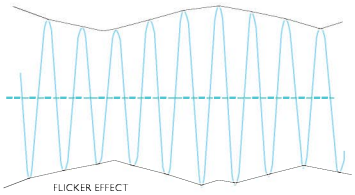


Sag and Swell :

Any short term voltage decrease (sag) or increase (swell) for a time from half cycle to 3 seconds

Consequences :

Loss of data or the lights flicker.

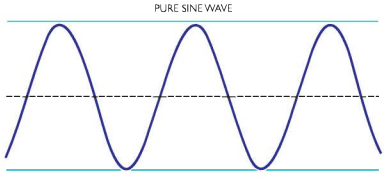


Pure Sine Wave

Pure Sine wave power is 100% clean, regulated, completely stable and distortion free.

Advantages

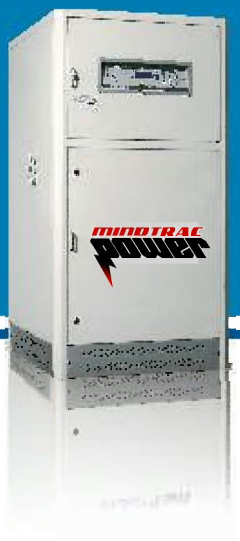
Pure Sine wave power is absolutely safe for running the most sensitive and expensive equipment without the irritating, humming sound



MINDTRAC POWER

E SERIES

A Healthier Alternative to Generators



	Inverter	Generator
Pollution		
➔ No Noise Pollution	✓	✗
➔ No Emission of Thick Fumes	✓	✗
➔ No Pressure of Community in Residential Areas	✓	✗
Convenience		
➔ No Time Gap (Start up delay) between power cut and resumption of back-up power	✓	✗
➔ No need to regularly monitor quantity of Battery Charge / Fuel	✓	✗
➔ No dependence on attendents for refueling, switching on/off, buying of fuel etc.	✓	✗
Cost		
➔ Low Initial Cost	✓	✗
➔ Low Running Cost - since inverter draws only the required power from the battery unlike generator which always runs full load resulting high fuel cosumption	✓	✗
➔ No effect of Rising Fuel Prices	✓	✗
➔ No Chance of Fuel pilferage	✓	✗
Quality of Power		
➔ Pure Sine Wave (100% pure power) i.e. constant output voltage and frequency	✓	✗
➔ No Fluctuation	✓	✗
➔ Completely safe for sensitive equipment	✓	✗
Maintenance		
➔ Low Maintenance Cost since inverter has no moving parts hence are virtually maintenance free unlike generator, which requires frequent cleaning up, change in mobile oil etc.	✓	✗
Installation		
➔ No Vibration	✓	✗
➔ Can be installed on any floor of your facility (depending online battery bank capacity)	✓	✗
Back-up Time		
➔ Option of bigger/ more batteries for longer back-up	✓	✗
➔ No need to store large quantity of inflammable fuel for longer back-up	✓	✗

Technical Specifications

1 phase input - 1 phase output

HSERIES

Type	1 phase input - 1 phase output			
Series	Pure Sine Wave Inverter			
Technology	DSP based PWM technology using IGBT			
Ratings	5kVA	7.5kVA	10kVA	
Model No.				
Input Parameters				
Input Supply	1 Phase, 3 Wire			
Voltage Range	110-280VAC			
Frequency Range	45-55 Hz			
Power Factor (charging)	0.85 to 0.95			
Output Parameters				
Voltage Regulation	220V ± 5%			
Frequency Regulation	50.0Hz ± 0.1Hz			
Peak Efficiency	>85-87%			
Output Waveform	Pure Sine Wave			
Total Harmonic Distortion	< 3%			
Crest Factor	> 3:1			
Overload Handling Capacity	101% for 100 Sec, 160% for 4 sec			
Battery Parameters				
Battery Type	12V/100-200Ah			
Battery Voltage(Nominal)	48/96/120V	120V	180V	
Battery Charging Current	6A - 20A ± 1.AMP			
Environmental Parameters				
Operating Temperature	< 45°C			
Acoustic Noise (at 1mts)	< 50dB			
Relative Humidity	Max 95% non-condensing			
Others				
Indications & Alarms	Backlit 16 x 2 Lines LCD Screen with Indications, Alarms & Remedy			
Protection Class	IP20			
Dimensions-WxDxH (in mm)	500X300X610	600x350x320	550x360x620	550x360x620
Weight (in kgs)	47	50	77	98

Specifications are subject to change without prior notice.

INV/SW/ 0001.1
Dated: 31st August, 2007

C SERIES

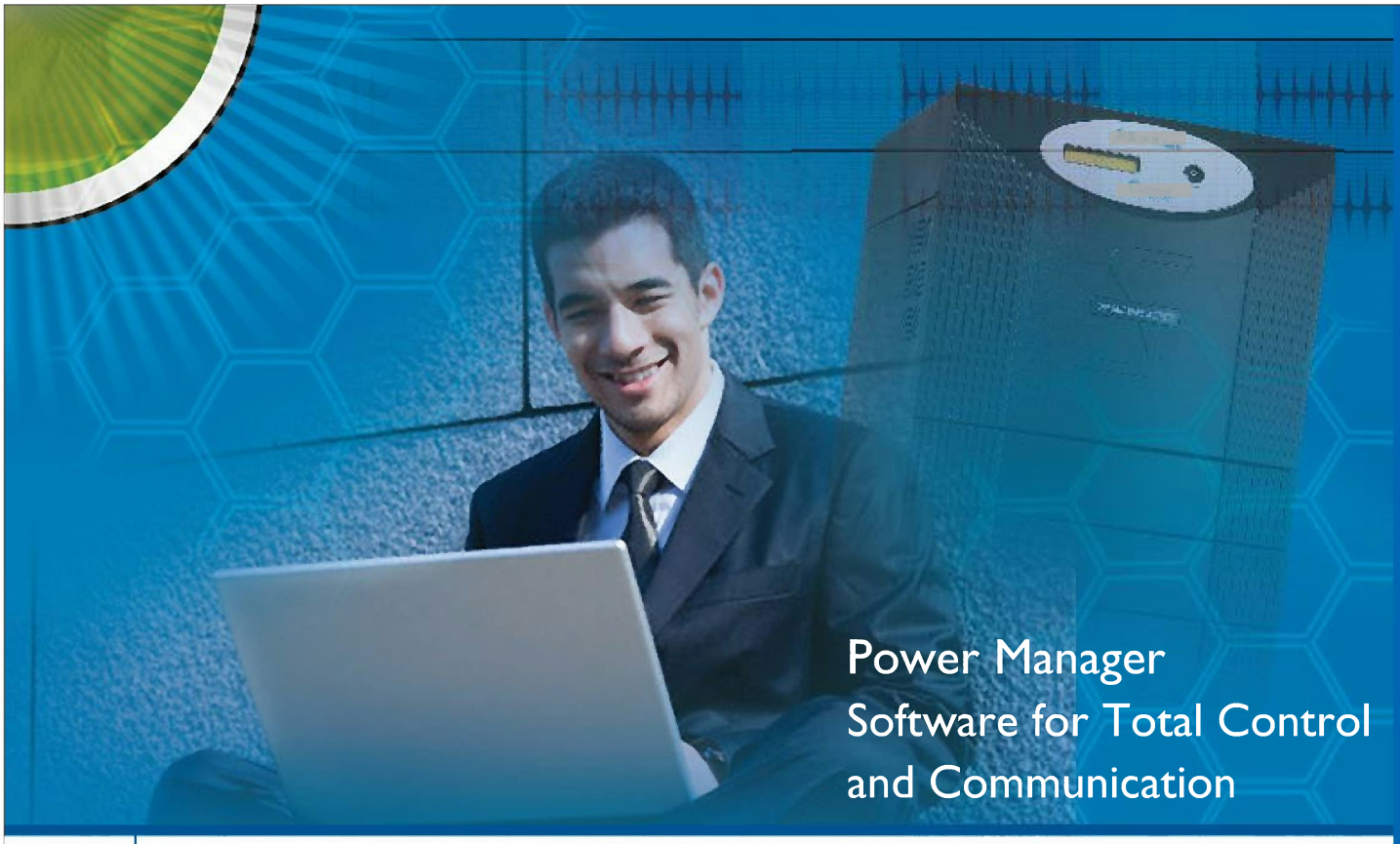
▪ Technical Specifications

3 phase input - 3 phase output

Type	3 phase input - 3 phase output											
Series	Pure Sine Wave Inverter											
Technology	DSP based PWM Technology using IGBT											
Ratings	5kVA	7.5kVA	10kVA	15kVA	20kVA	25kVA	30kVA	40kVA	50kVA	65kVA	80kVA	100kVA
Model No.	CC335K	CL337.5K	CL3310K	CL3315K	CL3320K	CL3325K	CL3330K	CL3340K	CL3350K	CL3365K	CL3380K	CL33100K
Input Parameters												
Input Supply	3 Phase, 4 Wire											
Voltage Range	280-465V AC (P-P)/145-270V(AC)(p.p)											
Frequency Range	45-55 Hz/155-65Hz											
Output Parameters												
Power Factor	0.8											
Voltage Regulation	230V ± 1%(P-N), 400V ± 1%(P-P), 120V ± 1% (P-N), 208 ± 1% (P-P)											
Frequency Regulation	50Hz ± 0.1Hz / 160H2 ± 0.01											
Peak Efficiency	>92%											
Output Waveform	Pure Sine Wave											
Total Harmonic Distortion	< 3%											
Crest Factor	> 4:1											
Transient Response	Recovery to ± 5% within 1.5 cycles											
Overload Handling Capacity	110% for 8 mins, 150% for 15 secs, 200% for 4 secs, 300% for 2 secs											
Battery Parameters												
Battery Type	12V/26-200Ah							2V/12V/100-1500Ah				
Battery Voltage (Nominal)	180V/240V/360V DC											
Battery Charging Current	3A ± 0.5A to 20A ± 0.5A							10A ± 0.5A to 150A ± 2.0A				
User Interface												
Communication Port	RS-232 Server & Client											
Operating System	Windows 95/98/NT/2000/XP/2003 server											
Environmental Parameters												
Operating Temperature	0-45°C											
Acoustic Noise (at 1mts)	< 55dB < 60dB < 65dB											
Relative Humidity	Max 95% non-condensing											
Others												
Indications & Alarm	Backlit 20 x 4 Lines LCD Screen with Indications & Alarms											
Protection Class	Ip20											
Dimensions-WxDxH (in mm)	450x700x700					450x700x750		640x860x790	735x790x1450		800x1000x1550	
Weight (in kgs)	100	110	145	198	208	220	240	300	375	450	550	650

Specifications are subject to change without prior notice.

INV/SW/ 0003.1
Dated: 31st August, 2007



Power Manager Software for Total Control and Communication

C SERIES

Power Manager (Multiple User Local Monitoring Software)

The MINTRAC POWER DSP Sine Wave Inverter - C Series have an RS-232 Interface for the Power Manager . This user -friendly Communication Software controls and monitors inverter performance and programs inverter commands. An easy- to- use software, it is based on the RS 232 world standard for interfacing Digital Signal Processor with computers. The Power Manager allows you to programme all the commands to be performed by it automatically . This software is very useful for communication systems including Satellite Systems, Air Traffic Control Systems, Internet Nodes, Bank A TM and any other application requiring maximum reliability and availability of high quality power such as computer labs, offices, biomedical instruments, telecommunication systems and industrial establishments. It ensures maximum safety for high-risk applications. Once the inverter is installed, the user need not worry about interruption, low battery level or any other damage, which would have occurred otherwise. A licensed copy of the software need to be installed and r un on the PC connected to the power system through which it star ts processing the data.

Characteristics

- Constantly informs user of the status of the inverter , whether locally or by sending messages to users connected to the network. Normally , the message contains information about output under voltage, output over voltage, battery voltage low or battery voltage high, if selected.

- Logs on important data containing input voltage, input frequency , output voltage, output frequency; output VA and battery voltage continuously to enable the user to check the performance at any time. Data logging enables the user to check the performance of inverter apart from knowing the status of the battery .

- Provides a standard control and monitoring capability , as it uses the TCP/IP communication protocol. It supports all operating systems such as Windows 98, 2000, Me, XP and NT. It also works fine on various Linux versions as Redhat,Debian, Slackware, Mandrake etc. It also provides the user with the added functionality of connecting himself to the internet systems situated in different locations by using either a dedicated network (intranet) or the Internet.

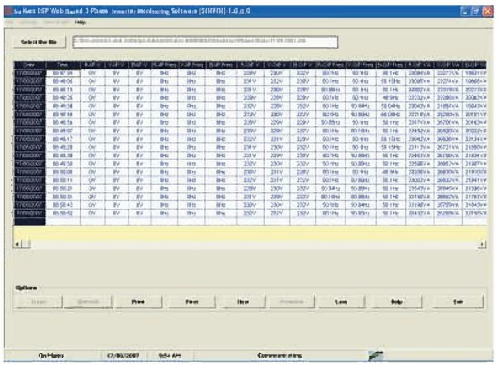
MINDTRAC POWER

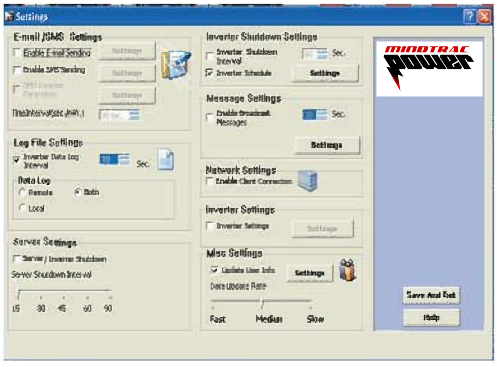
E SERIES

■ Software Functions- Power Manager

Software Functions

- Graphical Monitoring of the Inverter status: Easy to use powerful tool that allows monitoring and controlling the Inverters. Input Voltage, Input Frequency, Output Voltage, Output Frequency, Battery Status, Load Status, and Overload Status can be automatically monitored by it.
- Detailed Display of all Data: Provides on screen, all the data required to make an accurate and speedy diagnosis of the Inverter operations.
- Alarm Notification via e-mail and SMS: Can be configured to automatically notify an alarm via an e-mail or SMS message. In case of emergency conditions like Overload, High Batter y Voltage etc. to 4 users.
- Programming of Commands: The commands normally carried out by the users are programmable so that these are performed automatically e.g. shutting down and switching on the systems.
- Option of Multiple User format available





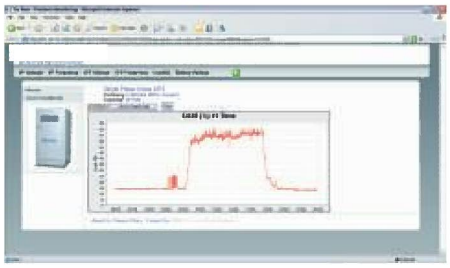
Powerdoc
Software for Total Control and Communication

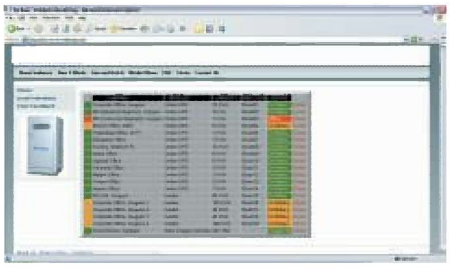
C SERIES

Powerdoc

(Web Based Remote Monitoring and Management Software)

Su-Kam has developed a web-based application for real-time management of its DSP Sine Wave Inverter without using the SNMP hardware. Su-Kam's Colossal Series Inverters, installed anywhere in the world, can now be centrally monitored and controlled by the user(s). This unique and fully validated software solution allows various parameters of the systems to be checked, including load and status of each system.





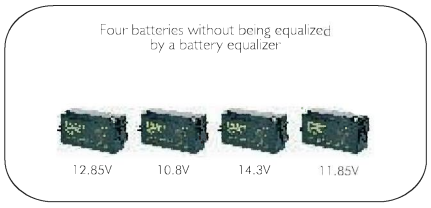
Characteristics

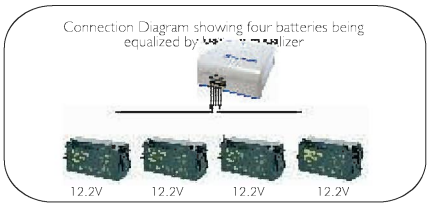
- For central monitoring of system parameters at various locations, for prioritizing shut down of the load, if the battery is running low, without visiting the installation sites.
- Suitable for all unmanned locations or mission critical applications, where Power Backup Systems are installed and where their assured availability is essential and critical. For example ATMs, Telecom Towers, Satellite based systems, fully networked chain of Retail Stores, chain of Multiplexes, their supply chain systems, online process control equipment etc.
- Managing / scheduling shutdown from a remote location
- Monitoring quality of the power generated by the inverter and grid power.
- Data logging of System parameters at defined time intervals which can then be plotted in graphical form for easy analysis and review of the grid power in terms of fluctuations, number of outages and resultant blackouts/ brownouts etc.
- Reassigning the values of the critical decision making set points, e.g Short Circuit, Overload, Battery Low, Output Voltage etc.

MINDTRAC POWER

Battery Equalizers
24V - 48V

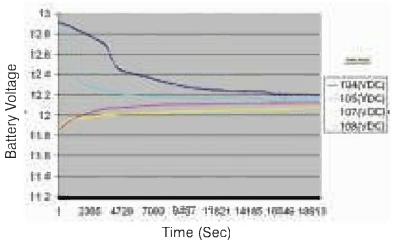
WHY EQUALIZER ?





- Series strings of storage batteries are used quite commonly with UPS, Inverter, Telecom SMPS Power Plants etc.
- When this series string is charged as a unit, slight mismatches or temperature differences cause charge imbalance in the form of unequal voltages amongst the batteries.
- Once imbalance occurs, it tends to grow with time. Low voltage batteries charge less effectively and high voltage batteries charge relatively faster.
- Battery equalization is to correct this imbalance.
- One needs to ensure that if different batteries are at different voltage/power levels, then balancing needs to be done to get maximum power, better efficiency & longer life from batteries.
- The Equalizer is a bi-directional circuit which balances the voltage between two or more individual batteries connected in series during charge, discharge and idle periods.
- The Equalizer prevents severe under and over voltage, common in series connections, which can compromise the performance, reliability, and life of the battery system.
- Equalized batteries are able to receive a full, clean charge, increasing battery capacity and life, therefore supporting your mission much better.
- Single equalizer can be used for at least 2 numbers of batteries and maximum for 4 numbers of batteries connected in series.
- Two equalizer units can be used for a maximum 7 numbers of batteries connected in series.
- Three equalizer units can be used for a maximum 10 numbers of batteries connected in series.
- N equalizer units can be used for a maximum(3N+1) numbers of batteries connected in series.

Graph shows that 4 batteries with unequal voltage levels connected in series are reaching the same voltage level when an equalizer is connected.



EQUALIZER SPECIFICATIONS		
	BEQ48	BEQ24
Nominal Battery Voltage	12V	12V
Maximum Equalization Current	4A	4A
Current Limit	< Max Equalization Current	
Quiescent Current Draw	< 25mA @ 48V DC (1.2W)v	
Operating Temperature	-5°C ~ +50°C	-5°C ~ +50°C
Storage Temperature	-5°C ~ +85°C	-5°C ~ +50°C
Safety	Reverse Polarity Protection (through fuse)	
Dimensions	114mm x 135mm x 53mm	81.5mm x 37.5mm x 11.5mm
Weight	0.5 Kg	0.22 kg
Patents	Patents Filed	Patents Filed