

COST EFFECTIVE



POWER PRODUCTS

FOR COMPUTERS ■ MICRO PROCESSOR BASED SYSTEMS
■ TELECOMMUNICATION ■ RAILWAY SIGNALLING ■ SCIENTIFIC AND
ANALYTICAL APPLICATIONS ■ PHOTOGRAPHIC/PRINTING ■ OFFICE
AUTOMATION ■ MEDICAL ELECTRONICS ■ INDUSTRIAL ELECTRONICS.

ACCUREG

BLUE ROCK SERIES LINE CONDITIONER

FEATURES

- ✓ FULL INBUILT ELECTRICAL LOAD TO LINE ISOLATION.
- ✓ 100 TIMES NOISE ATTENUATION CAPACITY
- ✓ 33% TO 60% HIGHER VOLTAGE FLUCTUATION HANDLING CAPACITY
- ✓ PRECISE $\pm 1\%$ VOLTAGE REGULATION
- ✓ NO ELECTRONIC OR ELECTRO-MECHANICAL COMPONENTS
- ✓ CONTINUOUS HIGH SPEED AND STEPLESS VOLTAGE REGULATION
- ✓ FULLY PROTECTED AGAINST OVERLOAD, OVERVOLTAGE AND SHORT CIRCUITS.
- ✓ FULL PROTECTION TO EQUIPMENT AGAINST BROWNOUTS AND SURGES.
- ✓ OPTION TO USE FOR HIGH CURRENT START UP MOTOR LOADS.
- ✓ CAN BE USED AS STEP-UP/STEP-DOWN TRANSFORMER AND FOR CURRENT LIMITING APPLICATIONS.
- ✓ HIGHEST RELIABILITY EXPECTATIONS
- ✓ TWO YEARS COMPREHENSIVE WARRANTY
- ✓ TURN KEY INSTALLATION AND SERVICE FACILITY ALL OVER INDIA.

Power from typical electrical outlet is satisfactory for motors, lights and other similar applications. But computers and micro processor based electronic devices can be hit with spikes, high voltage based transients, Surges, Brownouts, Electrical noise, Voltage fluctuations and other electrical irregularities coming from the same outlet. Raw, unconditioned, utility power can cause, programme errors, read/write errors, memory losses, equipment malfunctions, downtime, component damage and even destruction. Studies conducted by IBM engineers, George W. Allen and Donald Segal prove that, 80% of computer malfunctions are caused by electrical line disturbances.

Presenting BLUE ROCK series ACCUREG Line Conditioners. A true landmark in advanced technology for VOLTAGE REGULATION + ELECTRICAL ISOLATION + RELIABILITY. An ultimate protection for computers, micro-processor based systems and industrial applications.

HOW ACCUREG HELPS

ACCUREG LINE CONDITIONER is a highly sophisticated ferro resonant based isolated system. It isolates the computer and micro-processor based systems from the incoming main supply, thereby effectively shielding them from electrical line disturbances. ACCUREG Line Conditioner provide a very high speed and stepless voltage regulation, ensuring a steady supply in face of severe voltage fluctuations. It has excellent protective and functional features, which offer unparalleled protection and reliability. You are, assured of a very clean, steady and reliable computer grade power supply and protection against any electrical related eventualities.

TECHNICAL SPECIFICATIONS

INPUT

- ✓ Voltage : Series H 160 V to 285 V
Series K 130 V to 285 V
- ✓ Intermittent : For all series 300 V
- ✓ Frequency : 50 Hz
- ✓ Phase : Single

OUTPUT

- ✓ Nominal : 220 V/230 V/240 V AC ADJUSTABLE
- ✓ Regulation : $\pm 1\%$
- ✓ Total Harmonic Distortion : 6% Series H
8% Series K
- ✓ Voltage Correction Speed : 100 V/Sec
- ✓ Response Time : 20-25 ms.
- ✓ Energy Storage : 3 ms
- ✓ Noise & Transient (Attenuation) : 40 dB

PROTECTED AGAINST (INHERENT)

- ✓ Overvoltage
- ✓ Overloading
- ✓ Shortcircuit

ENVIRONMENTAL

- ✓ Operating Temperature Range : -20°C to 50°C
- ✓ Insulation : Class B
- ✓ Temperature Rise : As per IS 2026 Part II
- ✓ Operating Humidity : 95%
- ✓ Operating Altitude : 15,000 ft. max.

MECHANICAL :

- ✓ Controls : On/Off
- ✓ Metering : Output Voltage

OPTIONS

Application of ACCUREG Line Conditioners are not limited to computers and micro-processor based systems. ACCUREG BLUE ROCK Line Conditioners are available in two/three phase configuration upto 45 KVA. in DELTA/STAR Configuration.

ACCUREG Line Conditioners can be used as step-up/step-down transformers and for current limiting applications. They are available with wide variety of multiple output facilities. It is also available with optional electronic overvoltage/undervoltage trip facilities and push to start facilities. ACCUREG Line Conditioners, can also be designed to work on high inductive motor loads.

ACCUREG LINE CONDITIONERS (not this series) meet approval of Dept. of Telecommunications ITD specifications S-PV/100A (Final) and Railway specifications IRS S/74-89 and are approved by RDSO, Lucknow and DOT, Bangalore.

APPLICATIONS

Micro/Mini Computers
Main frame Computers
Personal Computers/XT and AT, 286 and 386
Computer Peripherals
Spectrophotometers and Analytical Instruments
Electro Medical Equipments
Test, Measuring and Laboratory Equipments

Office Automation Equipments (electronic Typewriters/EPABX)
Instrumentation & Process Control
Programmable Logic Controls
Telecommunication Equipments
Photographic and Scanning Equipments
Industrial Applications CNC machines.

For additional information on electrical line disturbances ask for our write up "Are you killing your computer" ?



ACCULINE

FERRO RESONANT BASED ON-LINE SINEWAVE UNINTERRUPTED POWER SUPPLY SYSTEM

FEATURES

- ✓ HIGH EFFICIENCY FERRO-RESONANT BASED TRANSISTORISED INVERTER.
- ✓ IC CONTROLLED OUTPUT FREQUENCY.
- ✓ EFFICIENT SWITCHING POWER DEVICES TECHNOLOGY.
- ✓ ONLINE SYSTEM, NO TRANSFER TIME.
- ✓ SINEWAVE OUTPUT.
- ✓ LOW HARMONIC DISTORTION.
- ✓ EXCELLENT OUTPUT VOLTAGE STABILITY.
- ✓ INHERENT OVERLOAD/SHORT CIRCUIT PROTECTION.
- ✓ SINGLE PCB FOR ON SITE SERVICING.
- ✓ LOW MAINS VOLTAGE PROTECTION.
- ✓ HIGH MAINS VOLTAGE PROTECTION.
- ✓ LOW BATTERY PROTECTION.
- ✓ CHOICE OF AUTOMOTIVE/TUBULAR/PLANTE OR INTERNALLY PACKED MAINTENANCE FREE BATTERIES.
- ✓ UPTO 4 HRS BACK UP TIME USING HIGHER AH BATTERIES.
- ✓ 80% INVERTER EFFICIENCY.
- ✓ FACILITY TO BE USED AS LINE CONDITIONER, IN CASE OF MANUAL BY-PASS OPERATION.
- ✓ LOW WEIGHT AND SIZE.
- ✓ CONSTANT VOLTAGE CURRENT LIMITING THYRISTORISED BATTERY CHARGER

PRODUCT DESCRIPTION

An on-line, Uninterrupted Power supply system, always supply power from its own inverter, irrespective of the presence of mains or generator power supply. Under normal operation, the converter supplies power to the inverter and a battery charger keeps the batteries in the charged condition. In case of power failure, the batteries take over and supply power to the inverter. Therefore there is no break in output power supply, during power failure.

ACCULINE is state of the art ON-LINE Uninterrupted Power Supply system, based on ferro-resonant design.

Reliability has been foremost consideration, while designing **ACCULINE**. To enhance the reliability, use of electronic components has been minimised and very simple operating principle has been applied.

ACCULINE is designed and precisely engineered around following three sub-systems :

CONVERTER AND BATTERY CHARGER SYSTEM :

A sophisticated thyristorised controlled, converter, supplies power to the inverter, for a on -line operation and to the batteries, for charging them, in a constant voltage, current limiting mode. Thyristor controlled circuitry, offer immunity to the system against widely fluctuating input voltage. Output of the battery charger, is adjustable, to fine tune battery charging with various types of batteries. Choice of ferro-resonant type converter- charger is available, as a special option.

INVERTER

The inverter is a robust and highly efficient, but simplified, transistorised system. The control system is a precise squarewave generator, designed around CMOS logic circuit, for clock-work precision. All other control circuits are incorporated on the same control card. High efficient transistors, at the output, provides excellent reliability and reduced size. PWM (Pulse width Modulation) technique has been purposely avoided. PWM technique, uses a feedback path to control the output voltage. This system increases the parts population and results in complex circuit, affecting the overall reliability. If feedback path becomes inoperative, by any reason, there will be an uncontrolled undershoot or overshoot of the output voltage, which may damage the equipment. Moreover, in PWM technique, the total harmonic contents, is load dependent.

Simple design and circuit enhances the overall reliability of this section. Single card system, facilitates replacement on site, instantly.

FERRO-RESONANT TRANSFORMER :

The square-wave output from the inverter is fed into a highly efficient, sophisticated, ferro-resonant transformer and thus, **ACCULINE** scales a new high in reliability and excellence in performance. This isolated ferro-resonant transformer, converts the squarewave, into a low distortion sinewave and effectively isolates load from the inverter, protecting them both. On the output side, the ferro-resonant transformer offers unique advantages of its inherent features like protection from short-circuit, over loads, overvoltage and electrical noise, to the connected equipment. While, on the input side, it isolates the inverter from all electrical abuses and irregularities. Ferro-Resonant transformer provides excellent stability to output voltage against dynamic load variations.

ACCULINE-AS A LINE CONDITIONER

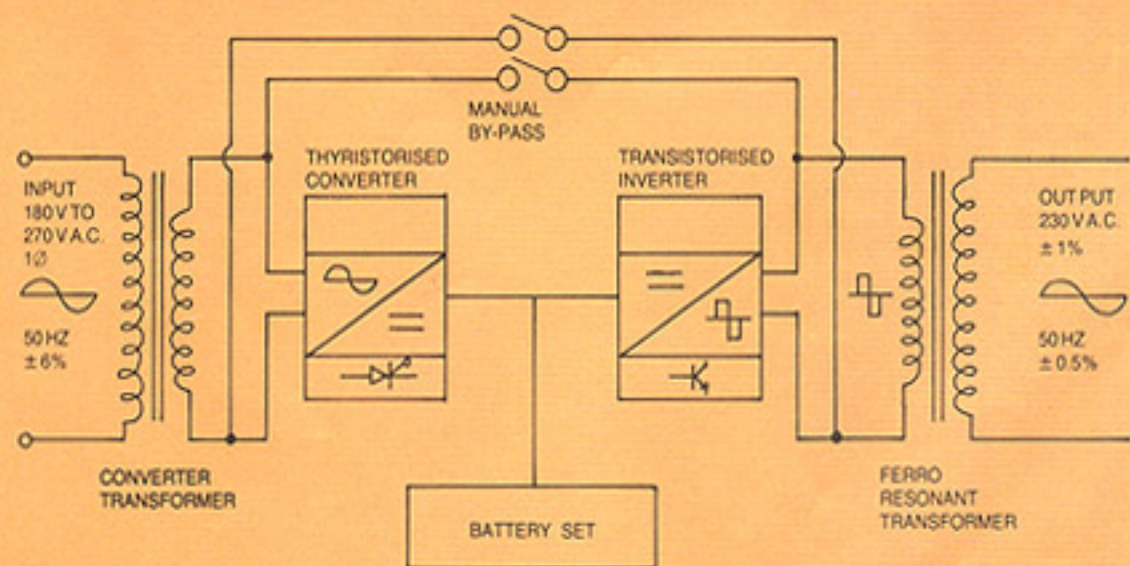
Use of ferro-resonant transformer at the output, Offers excellent and unparalleled flexibility and proposes to use the **ACCULINE** as Line Conditioner in case of UPS by-pass system mode. This method provides protection to the equipment connected to **ACCULINE**, from damaging electrical line disturbances, even if the back-up power is lost.



TECHNICAL SPECIFICATIONS

✓ Input Voltage	: 180 to 270 Volt A. C. Single Phase
✓ Input Frequency	: 50 Hz $\pm$ 6%
✓ Output Voltage/Frequency	: 220/230V A.V. Single Phase 50.00 HZ
✓ Output Frequency Stability	: 0.5%
✓ Output Voltage Regulation	: $\pm$ 1%
✓ Output Load Regulation	: $\pm$ 1%
✓ Inverter Efficiency	: Over 80%

✓ Battery Voltage	: 24 V.D.C. up to 1 KVA 48 V.D.C. 1.5KVA/2.0 KVA 60 V.D.C. 3 KVA & above
✓ Battery Type	: Automotive/Tubular/ Plante or SMF
✓ Charger	: Constant voltage current limiting thyristorised system
✓ Short Term Rating	: 200% FOR 25 ms
✓ Power Factor of Load	: Unity to 0.8 Lagging
✓ Harmonic Distortion	: THD 5%
✓ Cooling	: Forced
✓ Relative Humidity	: 90% Non-condensing
✓ Protection	: Overloading, Shortcircuit Mains over/under voltage, Low Battery
✓ Alarm (Audio)	: Mains Over/Under Voltage Low Battery
✓ Inverter System	: Online, continuous duty
✓ Indications (Visual)	: Power on/off, Mains Over/ Under Voltage, Inverter ON/OFF, Low Battery Voltage, Battery Charging.
✓ Indication (Meters)	: Output voltmeter (All capacity) output Ammeter (Above 1 KVA)
✓ Special Features	: Use as Line Conditioner during manual by-pass.



SCHEMATIC DIAGRAM OF ACCULINE FERRO-RESONANT BASED ON-LINE SINEWAVE UNINTERRUPTED POWER SUPPLY SYSTEM

MICROPROCESSOR CONTROLLED OFF-LINE UNINTERRUPTED POWER SUPPLY SYSTEM

FEATURES

- ✓ MICRO-PROCESSOR BASED CONTROL
- ✓ ULTRA-THIN PROFILE
- ✓ 2 MS TRANSFER TIME
- ✓ LOW VOLTAGE PROTECTION
- ✓ HIGH VOLTAGE PROTECTION
- ✓ LOW BATTERY PROTECTION
- ✓ CONSTANT VOLTAGE/CONSTANT CURRENT CHARGER
- ✓ OVERLOAD PROTECTION
- ✓ 90% INVERTER EFFICIENCY
- ✓ SINGLE PCB FOR INSTANT SERVICING
- ✓ UPTO 45 MINUTES LOAD DEPENDENT BACK UP TIME
- ✓ MAINTENANCE FREE BATTERIES
- ✓ OPTION FOR INCREASED BACK UP TIME USING AUTOMOTIVE BATTERIES.

PRODUCT DESCRIPTION

Here is a hi-tech ACCUPOWER, A MICRO-PROCESSOR CONTROLLED, Slimprofiled Uninterrupted Power Supply system, for instant power to your computer and micro-processor based system during a power failure. Data on the computer is not erased and work can be continued during the power failure.

ACCUPOWER provides sufficient, clean and steady power to your computer and peripherals between 30 to 45 minutes, depending on the load connected to it, during a power outage. Option is available for increased back up time using an optional automotive batteries and a power pack. The transfer time is only 2 milliseconds, achieved by a fast acting relay, which transfers the power to the inverter smoothly WITHOUT loss of any data or interrupting any work on the computer. Once you are on the UPS, you can either save your data and close the files or switch over to the auxiliary power, like a generator and continue working. UPS automatically transfers to charging mode, as soon as power is restored.

Notice the ultra-slim profile and light weight of ACCUPOWER. It is only 75 mm in height and weighs only 12 Kgs. with batteries. Absolutely suitable to sit right between your monitor and CPU and occupy no office space. Think about that easy portability. ACCUPOWER can be carried anywhere, anytime and installed in seconds. Front panel piano switches, puts the power control of your computers and peripherals, right at your fingertips.

A single VLSI micro-processor chip control critical functions of the UPS enhancing reliability many folds.

ACCUPOWER protects against undervoltage and overvoltage. If the line voltage is unsafe for smooth working of the computer, ACCUPOWER, automatically switches over to the inverter and supplies safe working voltage to the computer system.

ACCUPOWER employs a constant current and constant voltage battery charging system which ensures better utilization and life of the batteries. Protected against low battery voltage, of its truly maintenance free batteries has a life of over 12 months.

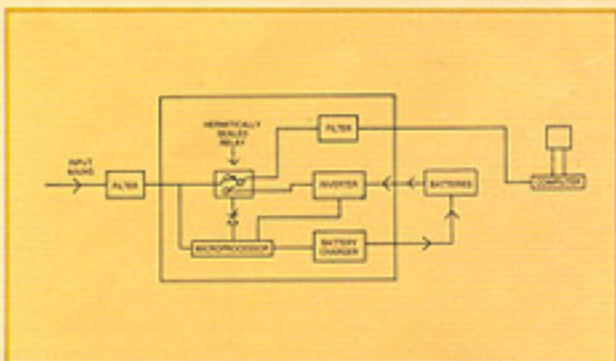
High tech design, increases inverter efficiency to 90%. Single printed circuit board facilitates instant replacement in ten minutes, by anyone.

Check out the performance and you will find it is the best UPS available for the price today.

TECHNICAL SPECIFICATIONS.

Input Voltage	: 230V A.C. 50Hz. Nominal $\pm 15\%$
Output Voltage (Normal)	: 230V A.C. 50 Hz.
Capacity	: 550VA
Battery Rating	: 12V 6.5 Ah x 2
Battery Type	: Sealed, Maintenance Free
Output Voltage (Inverter)	: 230V a.c. single phase $\pm 3\%$
Output Frequency (Inverter)	: 50Hz $\pm 1\%$
Overvoltage Protection	: Transfer to inverter, when supply voltage is 10% above nominal voltage. Retransfer to line at 5% of nominal voltage.
Undervoltage Protection	: Transfer to inverter at -15% . Retransfer to line at -10% of nominal input voltage.
Transfer time	: 2 ms (typical)
UPS System	: Off-Line
Waveform	: Quasi-squarewave. Suitable for computers and micro-processor based systems.
Back up time	: 30 to 45 minutes depending on the load connected. See note below.
Surge Supression	: Clamping Voltage : 765V at 50A Energy Rating : 80 joules (2ms)
Overload and Short Circuit Protection	: Electronic and by fuse
EMI/RFI Filter	: 0.15MHz at 10dB, 30MHz at 50 dB
Receptacles	: Three 5 pin 5A sockets at the rear.
Operating Temperature	: 0—40°C
Operating Humidity	: 0—90%, non condensing
Dimensions & Weight	: 365x375x75 mm
Weight	: 12 Kgs. approx.

Back-up time calculated using ideal conditions. It may slightly differ between unit the battery condition and ambient temperature.



SCHEMATIC DIAGRAM FOR ACCUPOWER

ACCUREG +

FERRO RESONANT VOLTAGE REGULATORS FOR RAILWAYS

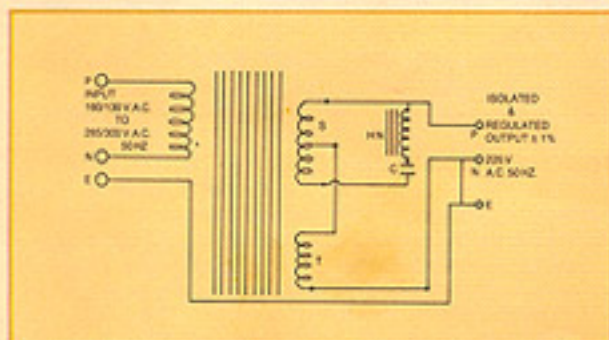


The fruits of product development has percolated into the range of ACCUREG + Line Conditioners. Set apart from the commercial models, these range of Line Conditioners caters the need for very sophisticated and demanding applications in various areas of Defence, Space, Hospitals, Research & Development and large on-line computer systems. Excellently reliable, ACCUREG + Line Conditioners, use different construction method to have reduced harmonics, no-load power losses and no-load currents. Available in range of 1.0KVA to 10.0KVA.



At Apple Systems, we have constantly believed that Research and Development always pays off. All our products are developed by us, backed by our own research and development department. The efforts has paid off. We met the Indian Railway Specifications (IRS) for ferro-resonant type voltage regulators, for use with Railway Signalling Applications, which are far the toughest standards for such product, set by any agency and become the second company in the country to get approval from Research Designs and Standard Organisations (RDSO) under Ministry of Railways, for use of our ferro-resonant voltage regulators for critical Railway signalling applications.

We now manufacture and supply these regulators from 1.0KVA to 5.0 KVA.



SCHEMATIC DIAGRAM FOR FERRO-RESONANT VOLTAGE REGULATOR

OTHER PRODUCTS :

ISOLATION TRANSFORMERS • DOT APPROVED FLOAT GUM BOOST CHARGERS (POWER PLANTS) • FERRO-RESONANT BASED INVERTERS • BATTERY CHARGERS • CUSTOM DESIGNED FERRO-RESONANT TRANSFORMERS • CONSULTANCY AND TURNKEY PROJECT IN RELATED AREAS

Sold & Serviced By :



Manufactured By :



apple systems
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