

Advanced Battery Management

A three-stage charging system designed to prolong the service life of UPS batteries. By charging the batteries only when necessary, battery life is significantly improved. Charging stage one: quickly recharges battery to approximately 90% of capacity. Charging stage two: fully charges the battery to 100%. Charging stage three: rest mode prevents overcharging. Charging stage one is initiated after a power outage or periodic UPS self-test.

AC

Alternating Current electrical power supplied by a utility company or from an AC generator.

AC Distributon

A module in the Intergy power system that distributes AC power to other Intergy power system modules.

AC Metering

Measurement of AC power input voltage and current parameters by sampling. The results of the measurements are used to calculate the rms equivalents for voltage, current and power, and also calculate the power factor and frequency.

AC Utility

The electric power furnished by an electric power utility company.

Active Load Share

A current sharing scheme controlled by the SM50 that adjusts the output voltage of individual rectifiers so that all rectifiers in a system produce the same output current.

Active Voltage Control

The SM50 adjusts the rectifier output voltages to maintain a constant system voltage (measured at the output or battery) independent of load fluctuations during normal operation.

Agent

A software program that acts as a focal point for data collection and configuration of a specific network entity (hardware or software). SNMP agents provide data to management stations regarding the operation and configuration of devices on a network.

Alternating Current (AC)

Current which changes (or alternates) direction at regular intervals. Since the current flows in one direction for the same amount of time that it flows in the opposite direction, the average value of the current flow is zero.

Ampere (Amp or A)

The unit of measure for current. One ampere is the amount of electricity per second that flows through a conductor such as a wire.

AVC

Active Voltage Control

Bandwidth

The data a cable can carry measured in bits per second (bps).

Battery Backup

A battery or a set of batteries in a UPS system. Its purpose is to provide an alternate source of power if the main source is interrupted.

Battery Capacity

The battery ampere-hour capacity at full charge, standard temperature, and at a specified (usually C10) discharge rate.

Battery Charger

A device or a system which provides the electrical power needed to keep the battery backup fully charged.

Battery Current Limit

System voltage control that limits the battery charge current to a preset value.

Bi-Directional Converter

A device which changes (or converts) alternating-current power to direct-current power and vice versa.

Blackout

A total loss of the AC utility (commercial power).

Boost

See buck and boost.

Brownout

A reduction in the voltage of the AC utility without complete loss of power.

Buck and Boost

A proprietary voltage regulation process used when an overvoltage or undervoltage situation occurs in the UPS. Undervoltage is boosted to make the voltage greater, and overvoltage is bucked to reduce it. The result is less reliance on the UPS battery, extending overall battery life.

Bus Voltage

The actual voltage supplied to the load as measured at the bus bars.

Bypass

A circuit used to change the path of the electrical power so that it goes around (or bypasses) its normal path. In the UPS, the bypass circuit is used to route the power around the major electronics in the UPS so they can be serviced without power interruption.

C10

Symbol for ampere-hour capacity of a battery at the 10-hour discharge rate, to a specified end voltage.

CE

Conformite Europeene (European Conformity)

Circuit Breaker (CB)

A device for manually opening (breaking) or closing a circuit to interrupt or apply electric power to an electrical apparatus. A circuit breaker can also open a circuit automatically when it senses an overload.

Clean Power

Electrical power which has been conditioned and/or regulated to remove electrical noise from the output power.

Configurable Parameter

An item that is stored in the SM50 non-volatile memory and that defines some part of the SM50 operation. All configurable parameters may be set using the Intergy Configuration Editor. Most may also be set from the SM50 keypad and display or from PowerManager

Configuration file

The information or data loaded into and the supervisory module that controls the behavior of an Intergy power system to suit the particular requirements of a customer's site or installation.

Configurations Database

This is the total set of configurable parameters.

Conformite Europeene (European Conformity)

CE marking is used to signify that a product complies with all the applicable performance and safety standards adopted by the members of the European Union and is therefore certified for sale in European Union countries.

Converter

A device which changes electrical energy from one form to another, such as from alternating current to direct current.

Current

Amount of electricity that flows through a conductor, such as a wire.

Current Share

A process used to balance output currents between rectifiers. See Active Current Share.

DC

Direct Current

DC Distribution (DCD)

A module in the Intergy power system that distributes DC power to the loads. It also provides protection for the load cables.

DC Distribution - Fused version (DCF)

A DC Distribution module that uses fuses for protection.

DC Distribution - Miniature Circuit Breaker (MCB) version (DCM)

A DC Distribution module that uses miniature circuit breakers for protection.

Delta Connection

A method of connecting a three-phase source or load in series for a closed circuit (3-wire, plus ground).

Digital Input

An input which recognizes an open-circuit and short-circuit.

Digital Output

A voltage free relay contact.

Direct Current (DC)

A type of current which never reverses its direction. Since the current flows in only one direction, the average value of the current cannot be zero unless the current has stopped flowing.

Double-Conversion

A UPS design in which the primary power path consists of a rectifier and inverter. Double-conversion isolates the output power from all input anomalies such as low voltage, surges and frequency variations by converting AC to DC to AC. See Online UPS.

Dry Contact

Isolated contacts through which the end user supplies an external circuit. Dry contact UPSs provide basic communication capabilities such as monitoring and shutdown

Efficiency

The ratio of the output power from the UPS to the input power from the utility. This shows the percentage of the input power that is available as useful output power. For example, a UPS that is 95% efficient delivers 95% of the utility power it receives to the load. The remaining power takes the form of dissipated heat.

EMC

Electro Magnetic Compatibility.

Emergency Shutdown

Used to instantly or quickly shutdown all of the electrical power available to the UPS and the load. An emergency shutdown device is usually used during a crisis to prevent damage to the UPS and the load. Some computer-room installations require a Remote Emergency Power Off (REPO) capability as part of their security/safety system.

Equalize

This is the process of increasing the Float Voltage to the Equalize Voltage to recharge or equalize the batteries.

Event

An alarm activation or de-activation.

Fast Charge

Increasing the Operating Voltage after a battery discharge, following an AC failure, to give a rapid battery recharge.

Fault Tolerance

The ability of a system to continue operating in the event of a fault.

Filtering

A method of removing noise from the output of a UPS preventing "dirty power" from reaching connected equipment.

Float Voltage

The set output voltage of the DC power system (not including temperature compensation or other adjustments).

Front Panel Keypad/Display

The SM50 local user interface.

Front Panel RS-232 Port

The SM50 front panel serial interface, used for local configuration via a laptop PC.

Frequency

The number of cycles (oscillation positive and negative) completed in one second. Defined as Hertz (Hz). In North America, utility power completes 60 cycles per second,(60 Hertz).

Full Load

The greatest load that a circuit is designed to carry under specific conditions; any additional load is considered an overload.

Graphic User Interface (GUI)

A computer system using graphics images on the screen rather than text to display applications information for the user. As used in the PowerManager software.

Ground (GND)

A conductor connected between a circuit and the soil.

Hardware Default Voltage

The rectifier output fail-safe operating voltage used if the rectifier microprocessor fails.

Hardwired

Describes any equipment connected to its power source by hardware attached directly to terminal blocks or distribution panels.

Harmonic Distortion

The presence of harmonics that change the AC voltage waveform from a simple sinusoidal to complex waveform. Harmonic distortion can be generated by a load and fed back to the AC utility line, causing power problems to other equipment on the same circuit.

Heterogeneous Network

A network with a multitude of workstations, and operating systems, and a variety of application types from different vendors.

High Rupturing Capacity (HRC) (fuse)

A precisely rated fuse which will operate under high fault current conditions, without self-destructing.

Homogeneous Network

A network of components - workstation, server, operating system from the same vendor, or compatible equipment that can run under the same network or operating system.

Host Port

The serial port used for connecting the SM50 to a remote computer via an RS-485 or an RS-232C connection.

Host Serial Port

One of the two serial ports (RS-232C or RS-485) with connectors at the rear of the SM50.

Hot-Swappable Batteries

A feature which enables the user to change UPS batteries without powering down the connected load.

Hot-Swappable Power Modules

A feature which enables the user to change UPS power modules without powering down the connected load.

I/O

Input/Output

I/O Board

A component board in an SM50 Monitor. This board is used to gather system digital and analogue inputs, and control digital outputs.

ICE

Intergy Configuration Editor software running under Windows 95 or Windows NT which allows editing of the SM50 configuration.

ILS

Intergy Large Power System

IMPS

Intergy Mini Power System

Input Line Cord

The covered bundle of wiring connected to the input terminals of the UPS. The end of the cord not connected to the UPS is connected, via an input plug, to an AC utility outlet supplying power to the UPS.

Input Plug

Connected to the end of the input line cord. To be plugged into an AC utility outlet receptacle.

Internal Bypass

UPS circuitry which provides a redundant power path. If there is an internal UPS fault, the connected load will still be supplied with unconditioned utility power.

Inverter

A machine, device, or system that changes direct-current power into alternating-current power.

IPS

Intergy Medium Power System

Isolation

The separation (often through the use of an isolation transformer) of one section of a system from undesired electrical influences of other sections.

Isolation Transformer

A multiple-winding transformer with physically separate primary and secondary windings. Although the two windings are physically disconnected, the magnetic field in the windings of the primary creates (induces) electrical power in the secondary winding. In this way the electrical power available at the input can be transferred to the output. An isolation transformer does not transfer unwanted noise and transients from the input circuit to the output windings. This attenuation, or reduction in amplitude, could be as high as one million to one.

LCD

Liquid Crystal Display

LEDs

Light Emitting Diodes located on the front of the UPS that inform users of various power conditions and UPS operations.

Line-interactive

A UPS containing an off-line inverter that must transfer on during a blackout, but provides faster transfer times than an off-line UPS. Power conditioning and surge suppression are provided to protect the connected load.

Load

Equipment that receives power from a UPS.

Load Bus

The bus to which the Load equipment is connected.

Load Segments

Groups of receptacles on the rear panel of a UPS which can be independently controlled.

Load Shedding

The ability to selectively shut off a set of UPS output receptacles, extending the capacity of the UPS battery. Some Powerware UPS models are able to shed less critical loads by turning off selected output receptacles during an extended power failure while maintaining power to the more critical load(s) on the remaining output receptacles.

Low Voltage Disconnect (LVD)

A module in the Intergy power system that disconnects the load from the batteries from the when the battery voltage falls below a preset value. The LVD reconnects the load to the batteries when the battery voltage rises above a preset value.

Management Information Base (MIB)

The structure of the database in an Intergy power system.

Manual Bypass Switch (MBS)

A manually operated transfer switch used to bypass the major electronics in the UPS, so the UPS can be serviced without power interruption.

Mapping

The process of assigning physical entities to logical entities, e.g. when a particular analogue channel (internal or external) is assigned to be the channel used for measuring the bus voltage.

Maximum System Current

The maximum current that can be supplied by from an Intergy Power System (excluding batteries) under all conditions. Normally 120% of Rated System Current.

MCB

Miniature Circuit Breaker. A precisely rated, resettable circuit protection device.

MDV

Metal Oxide Varistor. A non-linear semiconductor device used for surge protection or voltage limiting.

National Electrical Code (NEC)

The code of standards and practices for the U.S. electrical and electronics industry. Developed by the National Fire Protection Association of Quincy, Mass. First published in 1896.

Network Transient Protector

An in and out RJ11 jack for telephone/modem protection (120V models only) or RJ45 for 10Base-T network cable. It isolates connected equipment such as modem and fax machines from "back door" power surges.

Noise

Random, sporadic, or multi-frequency electrical signals that become part of a transmission making the signal or information more difficult to identify.

Nominal System Voltage

The DC output voltage generally used to describe a type of system, usually 24 V or 48 V.

Nominal Value

A designated value which has been accepted for the sake of convenience. For instance, nominal voltages are values assigned to circuits so that the voltages of the circuits can be conveniently discussed as 120 Vac nominal units, or 230 Vac nominal units.

Null Modem Cable

A special cable for connecting two RS-232 ports or devices directly, in place of a modem connection.

N+X UPS Redundancy

This form of redundancy provides reliable UPS operation by eliminating any single point of failure within the UPS.

Off-line UPS

A UPS type which feeds power to the load directly from the utility and then transfers to battery power via an inverter after utility drops below a specified voltage. The delay between utility power loss and inverter startup can be long enough to disrupt the operation of some sensitive loads. Also called a standby UPS.

Online UPS

A UPS in which the inverter is on during normal operating conditions supplying conditioned power to the

load through an inverter or converter that constantly controls the AC output of the UPS regardless of the utility line input. In the event of a utility power failure, there is no delay or transfer time to backup power.

Operating Voltage

The voltage the SM50 is configured to maintain at the load, after adjustments for temperature compensation, equalize, etc.

Outlet

Any point on a wiring system where current is taken to supply electrical power for a load.

Output Enable Delay

The delay between the start of primary side switching and the start of output current walk in. This is in two parts: a fixed hardware delay controlled by the secondary side control circuits and an adjustable delay controlled by the microprocessor. During this period the output voltage is at the minimum of approximately 40 V.

Overload

A condition in which the load wants more from the power source (such as a UPS) than the power source has been designed to supply.

Overvoltage Shutdown (OVSD)

A protection method that will shutdown any rectifier module with an output voltage over a preset maximum value.

Parallel Online UPS

Online UPS technology that provides redundant sources of conditioned backup power so that the critical load is protected even in the event of UPS component failure.

Parameter

A configuration value that the user can set in the SM50 configuration database. This value is stored in non-volatile Flash memory. For example: System Float Voltage.

Power Factor (PF)

The ratio of total real power, (W) to the total apparent power in volt-amperes (VA); W/VA .

Power Management Software

Provides monitoring and shutdown for UPS and connected load.

Power System

A rack module, single rack or several parallel connected racks, providing DC power to a single DC bus.

Preset System Voltage

The preset voltage is normally defined by the customer according to the nominal system voltage and the ambient temperature of the battery. This is the output voltage the rectifier uses in the event of a communications failure with the SM50. It is set to the system voltage specified by the customer during systems final test but may be changed via the SM50 or the rectifier front panel (if fitted).

Preset Voltage

The voltage that a rectifier will default to if communications with the Supervisory Module is lost. Generally, this is set to the float voltage by the Supervisory Module.

PSTN

Public Switched Telephone Network

Rackmount UPS

UPS that can be mounted in a rack along with servers, hubs, and other devices.

Rated Rectifier Current

The maximum output current of a rectifier at 58V for a 48 V (nominal) rectifier, or 29 V for a 24 V (nominal) rectifier.

Rated System Current

The sum of the rated rectifier currents in the Intergy power system.

Raw Power

Electrical power which may or may not contain unwanted electrical signals.

Receptacle

A contact device installed at an outlet designed to accept a single plug. Receptacles on the rear of a UPS accept plugs from supported system equipment such as computers or monitors.

Rectifier

A module fitted to the Intergy power system that converts AC input power to regulated DC output power.

Rectifier Bus

The bus to which the outputs of the rectifiers are connected.

Rectifier Magazine

A module in the Intergy power system used to connect the rectifiers to other modules in the Intergy power system.

Rectifier Voltage

The voltage to which the rectifiers are set. This is assumed to be the same for each rectifier and does not include current share adjustments.

Redundancy

Duplication of elements in a system or installation to enhance the reliability or continuity of operation.

Regulation

A method of limiting voltage to a narrow range.

Reserve

Battery time remaining to end of discharge

RFI

Radio Frequency Interference

RM

Rectifier Magazine

RS-232

Also called serial ports; a method of communicating digital information in which the data bits are transmitted sequentially over one line.

RS-232C

A common point-to-point hardware configuration for serial communications.

RS-485

A multidrop hardware configuration for serial communications. There is no intrinsic method of bus collision detection in RS-485, so higher layers in the protocol stack must take this into account.

Scalable UPS

A UPS that allows for expandability; for example, enables a UPS to accommodate a larger load by purchasing additional power modules.

Simple Network Management Protocol (SNMP)

A request-response protocol that collects management information from network devices and provides a way to set and monitor configuration parameters.

Sine Wave

The sinusoidal wave form exhibited by alternating current.

Single-Phase Power (1Ø)

Power that is provided by a single source which normally includes one hot lead and a grounded return line (neutral).

Slope Discrimination Method

A scheme that causes the Overvoltage Shutdown set point to fall with increasing load.

SNMP

Simple Network Management Protocol

Square Wave

Output waveform generated by very basic, low-cost UPSs. Functions adequately for less sensitive loads, but may not provide acceptable quality input for some types of electronic equipment.

Standby Power System

See Off-Line UPS.

Start-On-Battery

Enables user to power up UPS in the absence of utility power.

Start Up Delay

The interval between power on and the start of current walk in. It is the sum of the Primary Enable Delay and the fixed and adjustable portions of the Output Enable Delay.

Status LEDs

Light Emitting Diodes (LEDs) that show the status of the UPS when they light up or turn off.

Step Wave

(Modified Sine wave) Enhanced version of square wave that provides adequate input for some more sensitive loads, but still not as high quality as a sine wave.

Supervisory Module (SM20, SM30 or SM50)

The module that monitors and controls the operation of the DC power system.

Surge

A transient (or momentary) wave of current, potential, or power in an electric circuit.

System Voltage

The nominal voltage of the Intergy power system, equal to the nominal voltage of the rectifier modules. 48 V or 24 V.

Temperature Compensation

Adjustment of the rectifier output voltage to provide the optimum charging voltage for the battery. One of the components in system voltage control, calculated by the Supervisory Module calculation based on battery temperature.

Temperature Sensor

A sensor that is used to produce a variable electrical output representing the temperature of a component, typically a battery.

Terminal Block

An insulating base equipped with terminals for connecting secondary and control wiring. Used on hardwired equipment, such as a UPS, when input plugs and output receptacles are either impractical or unavailable.

Terminal

A connector for attaching a conductor to an electrical apparatus.

Three-Phase Power (3Ø)

Power that is provided by a single source with three outputs with a phase difference of 120 ° between any two of the three voltages and currents.

Transfer Switch

A switch which will transfer current from one circuit path to another without interrupting the flow of the current.

Transformer (T)

A device that raises or lowers the voltage of an alternating current electrical source.

Transient

The fast radical change in a smooth sine wave that occurs in both voltage and current waveforms during the transition from one steady-state operating condition to another.

Trickle Charge

With the trickle charging process, the battery receives a constant voltage feeding a low current. Constant use of this method dries the electrolyte and corrodes the plate, reducing potential battery service life by up to 50 percent.

Two-Phase Power

Power which is provided by a single source with two outputs which may be 180 degrees out of phase or 120 degrees out of phase.

UL

Underwriters Laboratories. An approval organisation based in the United States.

Uninterruptible Power System (UPS)

A system designed to automatically provide power, without delay or transients, when the normal power supply is incapable of supplying acceptable power. Some UPSs also filter and/or regulate utility power.

UPS Topology

Overall term describing the internal circuitry of a UPS. There are three basic UPS topologies: standby (off-line), line-interactive, and online.

User-Replaceable Batteries

User replaceable batteries allow the user to easily exchange UPS batteries, once the unit has been turned off.

Volt (V)

The unit of measure for voltage. Voltage is the electrical pressure which forces the current to flow in a conductor such as a wire.

Volt-Ampere (VA)

Voltage (V) multiplied by the current (ampere); apparent power. For instance, a device rated at 10 amps and 120 V has a VA rating of 1200 or 1.2 kVA.

Walk-In-Time

The time that the rectifier takes to reach rated output current after the Start Up Delay. The slope is fixed so that a lower output current will have a shorter walk in period.

Walk-In

The process of gradually ramping up rectifier output voltage (and current) at start up to prevent a large input current surge.

Watt (W)

The unit of measure for true power. Watts = VA x Power Factor

Wye Connection

A three-phase source of load connection, with a single common junction and three phase lines out or in.