



## Glossary

### A

#### AMBIENT TEMPERATURE

The temperature of the environment, usually in the still-air temperature in the immediate vicinity of a power supply, measured a minimum of 4 inches (100 mm) from the supply.

### B

#### BREAKDOWN VOLTAGE

A voltage level at which dielectric insulation fails by excessive leakage current or arcing. In reference to AC/DC Power Module, the breakdown voltage is the maximum AC or DC voltage that may be applied from input to output and/or chassis.

#### BURN-IN

Operating a newly manufactured power supply, usually at rated load, for a period of time in order to force component infant mortality failures or other latent defects.

### C

#### CURRENT LIMITING

An overload protection circuit that limits the maximum output current of a power supply in order to protect the load and/or the power supply.

#### CROSS REGULATION

In the converter with 2 or 3 groups' output, the interaction of output voltage on the main load of changing the other output load.

#### COOLING

Free-Air Convection.

#### CSA

The Canadian Standards Association was established in 1919 as an independent of Canadian organization that tests safety for electronic devices.

#### CASE TEMPERATURE

The temperature of the case of a power supply is under normal operating conditions.

### D

#### DC/DC CONVERTER

An electrical device that accepts an unregulated DC input and generates a regulated DC output, usually of a different voltage typically achieved by high frequency switching action employing inductive and capacitive filter elements.

#### DERATING

A reduction in an operating specification is to improve reliability. For power supplies, it is usually a specified reduction in output power to facilitate operation at higher temperature.

### E

#### EFFICIENCY

The ratio of total output power to input power expressed in percentage. Normally specified at full load and nominal input voltage.

This curve illustrates how the efficiency varies with loading. For wide input range modules, a family of curves is usually shown relating to minimum, nominal and maximum input voltages. On multiple output converters, all loads are varied proportionally to each other for this curve.

#### EMI

Electromagnetic Interference. It is the generation of unwanted noise during the operation of a power supply or other electrical or electronic equipment

#### ESD

Electrostatic Discharge. ESD is the current produced by two objects having a static charge when they are brought close enough to produce an arc or discharge.

#### ESR

Equivalent Series Resistance. The amount of resistance in series with an ideal capacitor that are exactly duplicated the performance of real capacitor. ESR is important in high-frequency applications.

#### ESL

Equivalent Series Inductance. ESL is the inductance in series with an ideal capacitor.

### F

#### FCC

The Federal Communications Commission is a US government agency that to make the standard, and governs the testing of conducted and radiated emissions. These are system level standards, but they are also used in specifying converters.

#### FUSE

A circuit protection device, primarily consisting a low melting point wire. If current passing through the wire exceeds a set level, the wire melts and the circuit opens.

### G

#### GROUND

An electrical connection that is made to earth. A power supply or converter of common is not actually ground unless it is connected to earth.



## Glossary

### H

#### HIGH LINE INPUT

AC/DC Power Module :

The maximum steady-state input voltage applied between the AC (L) and AC (N) input pins.

DC/DC Converter :

The maximum steady-state input voltage applied between the + and - input pins.

#### HI-POT TEST

High Potential Test. A test to determine if the breakdown voltage of a transformer or power supply exceeds the minimum requirement. It is performed in applying a high voltage between two isolated test pints.

#### HOLDUP TIME

The amount of time determined in milliseconds that a power supply's output remains within the specified voltage ranges after its input ceases.

#### HICCUP MODE

An operating mode triggered by an output fault condition (short circuit) causes the power supply to cycle on and off. The duty cycle of on time to off time maintains the internal powerdissipation at a safe level until the fault condition is corrected.

### I

#### INPUT FILTER

A low-pass or band-reject filter at the input of a power supply that reduces line noise fed to the supply. This filter may be internal or external to the power supply.

#### INPUT VOLTAGE RANGE

The high and low input voltage limits within an AC/DC Power Module meets its specifications.

#### ISOLATION

The electrical separation between input and output of a power supply by means of the power transformer. The isolation resistance (normally in mega ohms) and the isolation capacitance (normally in Pico farads) are generally specified and are a function of materials and spacing employed throughout the power supply.

#### ISOLATION VOLTAGE

The maximum AC or DC voltage may be continuously applied from input to output and/or chassis of a power supply.

#### IINPUT REFLECTED RIPPLE

The AC components measured at the input of the converter.

#### INRUSH CURRENT

At turn on, a high surge of an input current drawn by a power supply. It's also called Input Surge Current.

#### INRUSH CURRENT LIMITING

A protection circuit that limits the inrush current of the power supply at turn on.

#### I.E.C

International Electrotechnical Commission. IEC is an organization based in Switzerland that sets standards for electronic products and components. IEC does not conduct any testing, however, their standards have been adopted by many of the national safety agencies.

#### ISO

The International Organization for Standards is a worldwide federation of standards bodies that works to promote the harmonization of international standards.

### L

#### LINE REGULATION

The change in output voltage when the input voltage is changed from minimum to maximum, expressed as a percentage of the output voltage.

When the input voltage is changed from rated maximum to rated minimum while the outputs are at full load, the output voltage will also change. Line regulation is the percent change in output voltage.

#### LOAD REGULATION

The change in output voltage when the load on the output is changed, expressed as a percentage of the output voltage.

When the output load is changed from maximum rated current to minimum rated current, the output voltage changes. Load regulation is the percent change in output voltage. For multiple output supplies each output is measured, while all loads are varied.

#### LOW LINE

AC/DC Power Module :

The minimum steady-state voltage that can be applied between the AC (L) and AC (N) input pins of a module and still maintain output regulation.

DC/DC Converter :

The minimum steady-state voltage that can be applied between the - and - input pins of a converter and still maintain output regulation.

#### LEAKAGE CURRENT

The current flowing from input to output or input to case of an isolated power supply at a set voltage level.

### M

#### MINIMUM LOAD

The minimum load current required for a module to operate within specification.

#### MTBF

Mean Time Between Failures. The failure rate of a power supply expressed in hours, established by the actual operation or calculation from a known standard such as MIL-HDBK-217F.



## Glossary

### N

#### NOMINAL INPUT

The center value of the input voltage range.

#### NOMINAL VALUE

An usual, average, normal, or expected operating condition. This stated value is probably not equal to the value actually measured.

### O

#### OPERATING TEMPERATURE

The ranges of ambient or case temperature within which an AC/DC Power Module can be safely operated and meet its specifications.

#### OUTPUT VOLTAGE

The nominal value of the DC voltage at the output terminal of a power supply.

#### OUTPUT VOLTAGE ACCURACY

For a fixed output supply, the tolerance in percentage of the output voltage with respect to its nominal value under all minimum or maximum conditions.

#### OVER VOLTAGE PROTECTION

A power supply protection feature shuts down the supply, crowbars or clamps the output when its output voltage exceeds a preset level.

#### OVER TEMPERATURE PROTECTION

When the case temperature is too high, the converter will shut down operation. Thermal shutdown halts the PWM operation placing the converter in a low current drain mode until the case temperature decreases.

#### OVERSHOOT

While starting the module in the twinkling of an eye, the output voltage waveform will exceed the specified voltage after milliseconds return to specified voltage.

#### OPERATION TEMPERATURE

The range of ambient or base plate temperature in °C over which a converter can be operated safely at either rated or derated output power.

#### OPEN FRAME

A construction of power supply that is made without an enclosure.

#### OUTPUT TRIM

The maximum output power of a power supply.

#### OUTPUT POWER

Output voltage trimming allows the user to change the output voltage of the module. The output trim can be either a fixed resistor or a trimpot. Any value from zero ohm to infinity may be used to trim the output voltage when fixed resistors are used. A 10K, 1 or 10 Turn trimpot is usually specified for continuous trimming. This pin may be safely left floating if it is not used.

#### OUTPUT CURRENT RATING

The maximum current a power supply will operate reliably and with in its specifications.

#### OVERLOAD PROTECTION

See Current Limiting

### P

#### PI FILTER

A commonly used filter at the input of a switching power supply or converter to reduce reflected ripple current. The filter usually consists of two parallel capacitors and a series inductor.

#### PRIMARY

The input section of an isolated AC/DC Power Module or a DC/DC converter.

#### PULSE FREQUENCY MODULATION (PFM)

A switching power conversion technique at a fixed operating duty cycle (or width) where the switching frequency is modulated to control power transfer for regulating power supply outputs.

#### PULSE WIDTH MODULATION (PWM)

A switching power conversion technique at a fixed operating frequency where the duty cycle (or width) of the switching period is modulated to control power transfer for regulating power supply outputs.

#### PUSH-PULL CONVERTER

A switch mode of a power supply topology uses a center-tapped transformer and two power switches are driven on and off alternatively.

### R

#### RATED OUTPUT CURRENT

The maximum load current a power supply was designed to provide at a specified ambient temperature.

#### REFLECTED RIPPLE CURRENT

The rms or peak-to-peak AC current generated at the input of the DC/DC converter that is a result of the switching frequency of the converter.

#### REGULATION

The ability of a power supply to maintain an output voltage within a specified tolerance as referenced to change conditions of input voltage and/or load.

#### REMOTE ON/OFF

Enables power supply to be remotely turned on or off. Turn-on is typically performed by open circuit or TTL logic "1" and turn-off by switch closure or TTL logic "0".





## Glossary

### RIPPLE AND NOISE

The magnitude of AC voltage on the output of an AC/DC Power Module expressed in mill volts peak-to-peak or RMS, at a specified band width. AC/DC Power Module output noise usually has two components: a frequency component at the switching frequency of the module and a high frequency component due to fast edges of the modules switching transitions. Noise should always be measured directly at the output terminals with a scope probe having an extremely short grounding lead.

## S

### SECONDARY

The output section of an isolated AC/DC Power Module and DC/DC converter.

### SHORT-CIRCUIT INPUT CURRENT

The maximum input current that a module will source with its output shorted.

### STANDBY CURRENT

The input current drawn by a power supply when shuts down by a control input (remote on / off).

### STORAGE TEMPERATURE

The range of ambient temperature within a power supply may be safely stored, non-operating, with no degradation in its subsequent operation.

### SWITCHING FREQUENCY

The rate which the DC voltage is switched on and off in AC/DC Power Module and DC/DC Converter.

### SHORT CIRCUIT PROTECTION

A protection circuit that limits the output current of a power supply under short circuit conditions.

### SMD

Surface Mount Devices

### SMT

Surface Mount Technology

### SIX-SIDED SHIELDING

A construction technique the circuit is placed into a metal case. This metal shielding minimizes any noise radiation from the converter components. A continuous shielded case has the base (or header) welded together, further reducing potential noise leakage.

## T

### TEMPERATURE COEFFICIENT

The average percent change in output voltage per degree centigrade change in ambient temperature over a specified temperature range.

### TRANSIENT RECOVERY TIME

The time required for the output voltage of a power supply to settle within specified output accuracy limits following a step change in output load current or a step change in input voltage.

### TEMPERATURE RANGE OF OPERATING

The temperature range of ambient in an operating power supply.

### TEMPERATURE RANGE OF STORAGE

The temperature range of ambient in a non-operating or safely stored power supply.

### T.U.V

Technischer Überwachungs Verein. T.U.V is an organization that tests products to VDE and DIN standards.

## U

### UNIT WEIGHT

This is the weight of the converter in gram.

### UL

Underwriters Laboratories is an independent of the organization that tests products for safety.

## V

### VOLTAGE BALANCE

The difference in magnitudes expressed in percentage, between two output voltages of a dual output power supply where the voltages have equal nominal values with opposite polarities.

The voltage balance is specified on dual converters. It is the difference in absolute terms between the positive output and the negative output expressed as a percentage.