

Technical Engineering Notes

GLOSSARY OF TERMS

For ease of use, Powerbox use a standard format for power conversion product specifications. The following terms and related definitions are listed in the same order as they appear in a typical product specification.

INPUT

VOLTAGE	Nominal RMS value(s) of Ac sinewave mains voltage(s) for which the converter is designed.
NOMINAL VOLTAGE	Typical frequently used input DC voltages for which the converter is suitable.
VOLTAGE RANGE	The range(s) of input DC voltage(s) over which the converter(s) operates within specification.
FREQUENCY	The range of mains frequency over which the converter operates within specification.
CURRENT AT NO LOAD	The current drawn by the converter from the supply when the load current is zero and the input supply voltage is at the low end of the specified range.
CURRENT AT FULL LOAD	The current drawn by the converter from the supply when the load current is at maximum rating and the input supply voltage is at the low end of the specified range.
REFLECTED RIPPLE	The AC current generated at the input of a DC/DC converter by the switching action of the converter.
PROTECTION	Indicates if the converter is fused internally. The recommended fuse rating for the power supply may be given.
REVERSE VOLTAGE PROTECTION	Protection circuit built into the input of the converter to prevent damage if a reverse polarity voltage is applied to the input.
ISOLATION	The electrical separation between the input and output expressed as a DC test voltage, and a resistance with parallel capacitance.
SAFETY ISOLATION	The electrical separation between the primary and secondary circuits and the safety standards to which the converter conforms in this respect.
FILTER	Indicates built in line input filter to attenuate reflected ripple current.

OUTPUT	
POWER	The maximum continuous power measured in watts that can be taken from the output (s) of the converter.
TURN ON DELAY	The time in seconds after switch on for the output(s) to reach their nominal voltage(s) within regulation limits.
OVERSHOOT	A transient change in output voltage in excess of specified regulation limits.
LINE REGULATION	The percentage change in output voltage caused by the input voltage varying over the specified range. This range is either mentioned, or is the actual input voltage range.
LOAD REGULATION	The percentage change in output voltage caused by a specified load variation.
CROSS REGULATION	The percentage change in output voltage of one output caused by a specified load variation on another output of a multi-output converter.
TRANSIENT RESPONSE	The maximum time for the output voltage to return within regulation limits following a specific load step change.
SETTING ACCURACY	The percentage difference between the actual voltage setting and the nominal output voltage at rated load and nominal line input voltage.

VOLTAGE BALANCE

The difference, expressed as a percentage between the voltage magnitudes of a twin output converter, where the outputs have the same nominal voltage but the opposite polarity.

VOLTAGE ADJUSTMENT

The range over which the output voltage can be adjusted (and the means of adjustment).

CURRENT ADJUSTMENT

The range over which the output current can be adjusted (and the means of adjustment).

RESOLUTION

The smallest incremental step adjustment possible by use of built-in controls.

RIPPLE AND NOISE

The sum of all the voltage noise components expressed as a peak to peak amplitude over a specified band width.

SWITCHING SPIKE

The peak to peak amplitude of the voltage spike which occurs at switching frequency on the output of switched mode converters.

DRIFT

A change of output voltage over a period of time, independent of input, load and temperature variations.

OVERVOLTAGE PROTECTION

A circuit which detects output overvoltages above a specified level and shuts down the converter to protect load circuits.

REVERSE VOLTAGE PROTECTION

A built-in circuit (or element) that protects the converter from a reverse polarity applied across the output terminals.

SHORT CIRCUIT PROTECTION

Automatic output current limiting to prevent damage to the converter when a short circuit is applied across the output terminals.

OVERLOAD PROTECTION

A protective feature that limits output power or current demands to prevent damage to the converter.

CURRENT LIMIT ADJUSTMENT

The range over which the protective current limit can be adjusted (and the means of adjustment).

THERMAL PROTECTION

An internal temperature trip that shuts down the converter if the internal temperature exceeds a predetermined limit.

TEMPERATURE COEFFICIENT

The percentage change in output voltage per °C change in external ambient temperature averaged over the specified full rating operating temperature range.

IMPEDANCE

The apparent impedance presented by the converter to its output terminals.

EFFICIENCY

The ratio of total output power to total true input power expressed as a percentage.

HOLD UP TIME

The minimum time the converter output(s) remain in regulation after loss of input power under full rated load and nominal input voltage conditions.

POWER FAIL

A logic compatible signal warning that the outputs will fall outside regulation limits due to the loss of input power.

MINIMUM LOAD

The load current that can be taken from a converter output, below which regulation is not guaranteed.

PARALLEL OPERATION

The ability of two or more converter outputs set to the same voltage to be connected in parallel to provide increased output current.

SERIES OPERATION

The ability of two or more converter outputs to be wired in series to provide a higher output voltage.

REMOTE SENSE

A method of compensating the deterioration of regulation caused by the resistance of load

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	connection lead. Accomplished by sensing the output voltage at the load and using the difference between this voltage and the internal reference to regulate the output voltage.	SAFETY LEAKAGE CURRENT	When the input voltage is at nominal, the current flowing from the input lines to the protective earth conductor.
PROGRAMMING	The control of converter output voltage and/or current by varying an external parameter (voltage, current or resistance).	RFI STANDARDS	Limits laid down by various national and international regulatory agencies for radio frequency interference generated by electrical and electronic equipment (see Section 3).
REMOTE ADJUSTMENT	The ability to vary output voltage and/or current over a specified range by an external control.	SHOCK STANDARDS	Definition of the mechanical “bump” tests that can be applied to the converter without damage.
REMOTE INHIBIT	Converter shutdown into a standby or idle mode by application of an external signal to the inhibit terminal.	VIBRATION STANDARDS	Definition of the amplitude and frequency of mechanical vibration that can be applied to the converter without damage.
INPUT COMMON	Normally referenced to the negative side of the converter input.	DESIGN TOPOLOGY	The conversion principle employed (eg. linear, switched mode flyback, half bridge etc).
LOGIC COMPATIBILITY	Type of logic signal that can be used without level change or impedance transforms.	SWITCHING FREQUENCY	The typical frequency of the converter switch at full rated load.
ON CONTROL INPUT VOLTAGE	Logic “hi” threshold.	EXTERNAL SYNCHRONISATION	The ability to synchronise the converter switching frequency to an external oscillator.
OFF CONTROL INPUT VOLTAGE	Logic “lo” threshold.	PCB MOUNTING	Designed for direct mounting onto printed circuit boards.
SHUTDOWN IDLE CURRENT	Current drawn by the converter from the supply in standby.	CHASSIS MOUNTING	Designed for mounting to a metal or other rigid surface in the host equipment. The unit has screw terminals for input/output connection.
ENVIRONMENTAL		ENCAPSULATED	Totally encapsulated and hermetically sealed in cast epoxy resin or similar plastic.
OPERATING TEMPERATURE	The range of ambient or baseplate temperature in °C over which a converter can be operated safely at either rated or derated output power.	VENTILATED CASE	Enclosed in a metal case with ventilation slots for cooling by convected or forced air.
DERATING	The output power reduction required for safe operation above a specified temperature, usually expressed as a % reduction per °C up to the maximum operating temperature.	CASE GROUNDING	Metal enclosures around converters will normally be connected to ground internally. Some DC/DC converters have insulated cases.
STORAGE TEMPERATURE	The range of ambient temperatures over which a converter may be stored long term without damage. Expressed in °C.	OPEN CARD PCB FORMAT	Construction of a converter is on a printed circuit board without chassis or cover.
COOLING	The process of removing heat dissipated internally within the power converter during normal operation. This may be by natural convection, or conduction to a baseplate, or by forced air.	L BRACKET	Open chassis construction, chassis normally having L shaped cross section.
HUMIDITY	The maximum moisture content in the surrounding air for operation of the converter over the specified operating temperature range. Expressed as a percentage, it is the ratio of the actual mass of water vapour present to the mass of water vapour in the same volume of saturated air at the same temperature and pressure.	CASED	Fully enclosed.
ALTITUDE	The maximum altitude at which the converter can be used without derating.		
GENERAL			
MTBF	The predicted average length of time (Mean time between failure) between failures exclusive of infant mortality and end of rated life.		
MTTR	The predicted average length of time to (Mean time to repair) repair a faulty unit with the specified spares kit.		
SAFETY STANDARDS	Standards laid down by various national and international regulatory agencies.		
APPROVED	Approval, listing or certification of the converter has been obtained for the standards specified.		
DESIGNED TO MEET	Provided the converter is correctly installed it will not prevent the host equipment from obtaining official recognition to the standards specified.		