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Industrial and COTS Power Supply Delivers 1500 W Under Extreme Conditions

TDK-Lambda has extended its LZSA series of industrial power supplies to include a 1500-W model with 48-V output. Like the other models in this series, the LZSA1500-4 has a unique feature set and safety-agency approvals not commonly found in standard off-the-shelf supplies. These capabilities reflect the power supply's highly rugged design, making it suitable for use in a variety of applications such as factory automation, computing, automatic test equipment (ATE), petrochemical, control systems and commercial-off-the-shelf (COTS) (Fig. 1.)

One of the LZSA series' unique features is an operating temperature range that extends from -40°C to +71°C. According to the vendor, most supplies in this class are only designed to operate at temperatures down to -10°C, and while they may start-up at -40°C, they do not meet regulation specs at this low temperature. In contrast, the LZSA series power supplies do maintain regulation across the full specified temperature range.

Another distinction for the LZSA series is its compliance with the MIL-STD-810E standard for shock and vibration. The vendor notes that most commercial power supplies do not meet this standard. The supplies in this series also meet the UL 508 standard for industrial control equipment, the SEMI 47 standard for semiconductor fabrication equipment and processes, and the Factory Mutual (FM) Class 1, Division 2 standard for hazardous locations. This last standard, which encompasses FM3600, FM3611 and FM3810, certifies the power supply's ability to operate in explosive gas atmospheres.

Other standards met by the LZSA series include Class B EMI standards for radiated and conducted emissions, and the UL60950-1 and EN60950-1 safety standards. These supplies also comply with the ring wave lighting surge test per IEEE C62.41 (6-kV/30-ohm, Criteria A) and immunity standards per EN61000-4-X. All units are RoHS-compliant and carry the CE Mark.

The LZSA1500-4 power supply produces a nominal output of 48 V, but this value may be adjusted across a range of 36 V to 56 V to accommodate non-standard voltage requirements. Like other members of the LZSA series, this model contains an internal fan, which enables it to deliver full-rated output power from -40°C to +60°C, derating linearly to 60% load at a 71°C ambient. Efficiency ranges from approximately 80% to 90% across line and load conditions (Fig. 2.)

The LZSA series power supplies operate across a wide range of input conditions. These units can operate from 85 Vac to 265 Vac and 47 Hz to 440 Hz, but can also operate with a dc input of 100 V to 400 V. These supplies include active power factor and harmonic correction, and comply with SEMI-F47 standards for input droop down to 100 Vac at full load. The units are designed to provide 20-msec hold-up and ride-through to avoid nuisance tripping during transient electrical interruptions.

Other features include remote on/off, front panel voltage adjust potentiometer, remote resistance or voltage programming and user-adjustable overvoltage protection. Status signals and controls include dc good, ac fail, inverter OK, 200-kHz sync signal, and active current share. In addition, on the front panel a green LED indicates output-good and a red LED indicates an overvoltage or overtemperature condition.

The LZSA1500-4 is available now and priced at $975 each in 1000-piece quantities. For more information, see http://us.tdk-lambda.com/lp/products/lzsa-series.htm.

Fig. 1. With its -40°C to +71°C temperature range and exceptionally long list of safety approvals, the LZSA1500-4 power supply is designed to deliver 48-V 1500-W output reliably in a variety of harsh environments.

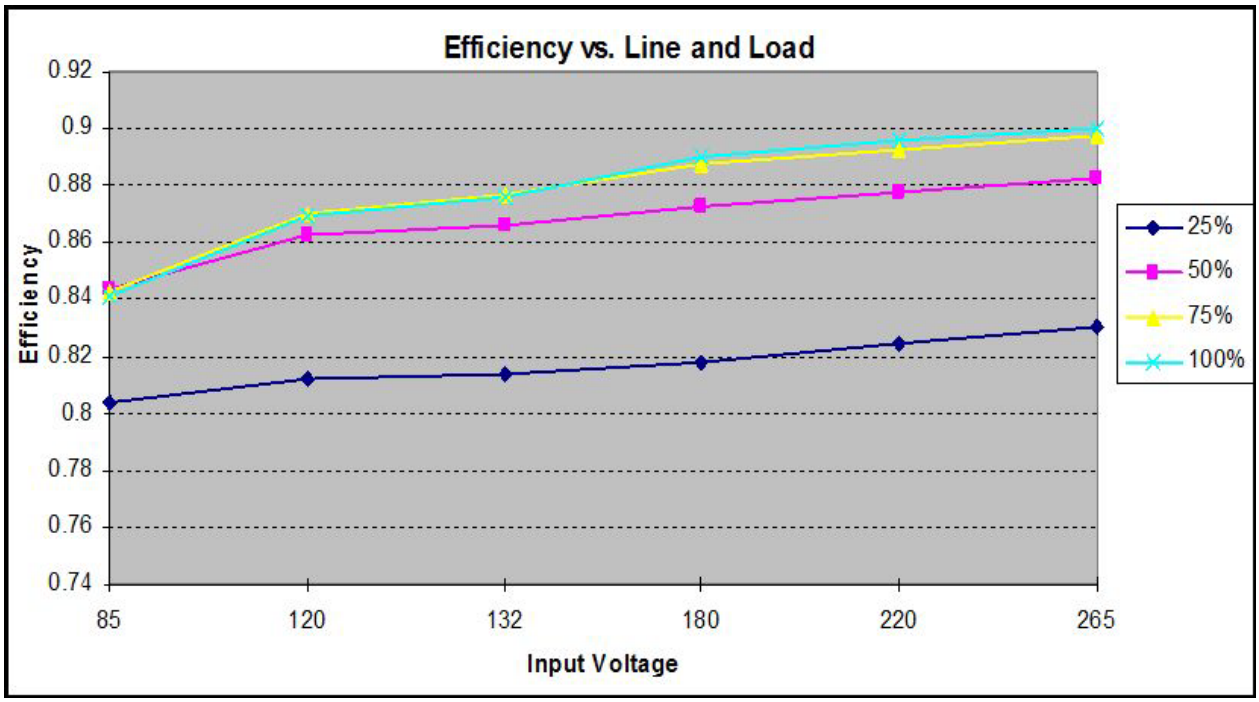

Fig. 2. Optimized primarily for reliability, the LZSA1500-4 power supply achieves better than 80% efficiency across its line and load conditions.