

Power Supplies

30-75W quarter brick DC-DC converters feature very wide input ranges for rail and industrial applications

November 2023

TDK Corporation (TSE:6762) announces the introduction of the 30 to 75W rated TDK-Lambda PYQ series of quarter brick footprint DC-DC converters. Capable of operating from an ultra-wide 12:1 input of 14 to 160Vdc (PYQ50) or 8:1 input 9 to 75Vdc (PYQ750), the converters are compatible with 12V, 24V, 48V, 72V and 110Vdc nominal system voltages. Applications include railroad rolling stock and trackside equipment, robotics, power generation and scientific research equipment.

The PYQ50 converters are available with 5V, 12V, 24V and 48V outputs and the PYQ75 with 12V, 15V, 24V, 28V and 48V. Using the trim function, they can be adjusted using a resistor or an external voltage to compensate for voltage drops, or to accommodate non-standard system voltages. The PYQ models have overvoltage, overcurrent and overtemperature protection.

Remote on/off is also included as standard. Overall dimensions of the converters are 12.7mm high, 36.8mm wide and 57.9mm in length. The plastic case is silicone potted to provide a high resistance to shock and vibration. To meet demanding high voltage requirements for transients and a 5,000m altitude, the power modules have an input to output isolation of 3,000V. With efficiencies of up to 90%, power losses are minimized allowing the products to operate at case temperatures of -40°C up to +105°C, (derating at high temperatures) with convection or forced air cooling.

All models carry the CE and UKCA marks for the Low Voltage and RoHS Directives and are certified to the IEC/UL/CSA/EN 62368-1 safety standards. With external components the PYQ series has been tested or designed to meet EN 50155 (railroad standard for electronic equipment in railroad vehicles), EN 45545-2 (fire safety), EN 61373 (railroad vibration standard) and EN 50121-3-2 (EMC).

More information on the PYQ series, including distributor inventory, can be obtained from the TDK-Lambda Americas website at <https://www.us.lambda.tdk.com>.

Main applications

- Railroad rolling stock and trackside equipment, robotics, power generation and scientific research equipment.

Main features and benefits

- Wide 14 to 160Vdc and 9 to 75Vdc input ranges with 3000V input to output isolation
- Quarter brick industry standard package
- Tested or designed to meet EN 50155, EN 45545-2, EN 61373 and EN 50121-3-2 railroad standards

Key data

Model		PYQ50	PYQ75
Input voltage range	Vdc	14 to 160	9 to 75
Output voltages	Vdc	5, 12, 24 and 48	12, 15, 24, 28 and 48
Maximum output power	W	50	75
Efficiency	%	Up to 89	90
Isolation	V	Input - output 3,000Vdc	Input - output 3,000Vac
Size (L x W x H)	mm	57.9 x 36.8 x 12.7	
Rail standards		Tested or designed to meet: EN 50155, EN 45545-2, EN 61373, EN 50121-3-2) and EN 50121-3-2	
Safety certification		IEC/UL/CSA/EN 62368-1	

About TDK Corporation

TDK Corporation is a world leader in electronic solutions for the smart society based in Tokyo, Japan. Built on a foundation of material sciences mastery, TDK welcomes societal transformation by resolutely remaining at the forefront of technological evolution and deliberately “Attracting Tomorrow.” It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK’s comprehensive, innovation-driven portfolio features passive components such as ceramic, aluminum electrolytic and film capacitors, as well as magnetics, high-frequency, and piezo and protection devices. The product spectrum also includes sensors and sensor systems such as temperature and pressure, magnetic, and MEMS sensors. In addition, TDK provides power supplies and energy devices, magnetic heads and more. These products are marketed under the product brands TDK, EPCOS, InvenSense, Micronas, Tronics and TDK-Lambda. TDK focuses on demanding markets in automotive, industrial and consumer electronics, and information and communication technology. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2023, TDK posted total sales of USD 16.1 billion and employed about 103,000 people worldwide.

About TDK-Lambda Corporation

TDK-Lambda Corporation is a trusted, innovative leader and global supplier of highly reliable power conversion products for industrial and medical equipment worldwide.

TDK-Lambda Corporation is aligned for fast responses to any customer need with R&D, manufacturing, sales and service locations in five key geographic regions, namely Japan, EMEA, Americas, China and ASEAN.

For more details, please pay a visit to: www.jp.lambda.tdk.com/en/

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