

3



POWER FOR ON BOARD TRAINS & TRAMS

Auxiliary Power Converters for on board trains trams locomotives and Mass Transit vehicles

Our TT series of auxiliary power converters and battery chargers utilise the latest power conversion switching technology to provide all types of trains and light rail vehicles with a compact, reliable, on board, cost effective power source. This range of auxiliary power converters is designed for use on board all types of mass transit public service vehicles including high speed, light rail and main line trains, underground trains, trams and trolley buses. The auxiliary converter units (ACU) provide all of the vehicle's on board power requirements by converting the unstable input voltage from the AC overhead catenary line or DC rail track power supplies into closely regulated output voltage and frequency and with DC for charging the vehicle's batteries and LVPS loads.

The ACU's convert AC catenary or DC track power sources into high stability three phase AC outputs of 50Hz, 60Hz and 100Hz at the industry standard AC voltages and with DC power from 28V to 120V. The PSI-TT combination converters produces stabilised AC power to drive the on board compressors for air conditioning, brakes, lighting, ventilation fans, heating, a single phase output is often used for providing an in seat service for passenger's computers and other auxiliaries.

In addition to the multiple AC outputs from the combination converter, the DC output provides power for the communications equipment and vehicle management systems, charges the vehicle's batteries and feeds other LVPS DC loads and critical equipment.

The Auxiliary Power Converters can be supplied for convert AC and DC voltages up to 3,000V or 750 DC track power sources and delivers single or multiple three phase AC outputs, single phase outputs in 50Hz, 60Hz or 100Hz plus high stability DC power for battery charging and LVPS loads.



We also supply DC specific duty battery charging auxiliary power converters designed for use with all types of on board vehicle batteries on DMU, EMU commuter trains, main line trains, Metro subway passenger vehicles and locomotives.

The DC converters can accept a wide input voltage and frequency variation especially notable from the diesel engine powered DMU generators and delivers a closely regulated output with hardly any ripple content in the DC necessary for prolonging the operational life of batteries.

The PSI-TT auxiliary power converters are custom engineered to suit individual requirements in sizes from 2kVA to 200kVA. Construction of the enclosure is in mild steel, stainless steel or aluminium and can be designed as an IP00 construction for integrating into the rooftop and vestibule types of air conditioning systems.

The outdoor all weather versions of converters can be supplied for mounting on the roof top of light rail and metro vehicles or suspending from under the vehicle.

The mechanical construction design of the enclosures and the internal positioning of components and sub-assemblies must be able to withstand the shock and vibration standards of the vehicle manufacturer and physical dimensions and features take into account the intended installation location for the converter and if there is any space or ventilation or other constraints. The ACU enclosures are manufactured in ingress protection levels from IP00 to the regular IP56 and with IP66 as a special design.

The trend in train design is focused on more cost effective use of space under the vehicle to accommodate traction systems, auxiliaries and auxiliary power. Also, on the recent generations of light rail vehicles many auxiliaries are now relocated in dedicated roof top chambers, consequently the ACU enclosures are designed for use with liquid cooling systems especially with the higher kVA sizes. This results in smaller dimensioned converters when compared with the conventional earlier generation of converter designs.



We also provide converters with internal and external fan cooling, filtered fan cooling or where audible noise and cooling air movement is an environmental issue we can provide convection/conduction cooling where space permits.

The power conversion modules used in the rectifier and inverters use the latest in power semiconductor switching technology using high frequency pulse width modulation inverter designs using IGBT power semiconductors and the use of high frequency four quadrant converters to ensure optimum performance and reduction in heating losses and reduction in audible noise level weight and dimensions.



POWER SYSTEMS INTERNATIONAL LIMITED

Chiltern House, High Street, Chalfont St.Giles, Buckinghamshire, England HP8 4QH

Telephone +44(0)1494 871544 Fax +44(0)1494 873118

Email info@powersystemsinternational.com Website www.powersystemsinternational.com