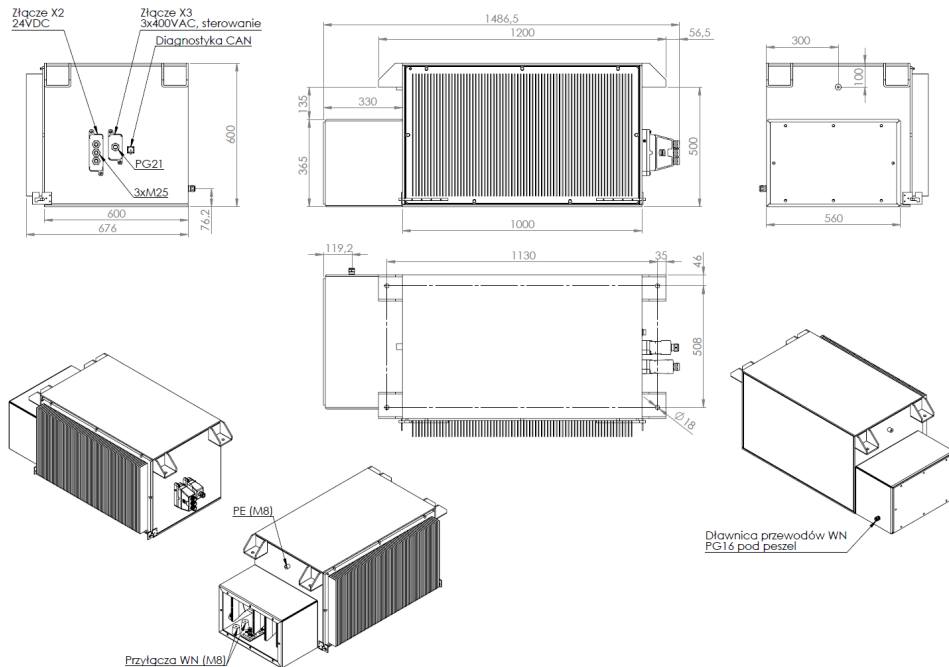


# ENI-PWW3000/24RT Converter

## Product Data Sheet



## APPLICATION

The ENI-PWW3000/24RT converter is intended as a 24 V<sub>DC</sub> and sine-wave 230 V, 50 Hz power supply for auxiliary lines in passenger rail cars. This is a UIC-550 compliant HV powered device and designed for installation beneath car floor panels.

## SPECIFICATIONS

Converter power supply ratings	
Supply voltage	1000 V <sub>AC</sub> – 16 2/3 Hz (800 to 1200 V <sub>AC</sub> ) 1000 V <sub>AC</sub> - 50Hz (800 to 1200 V <sub>AC</sub> ) 1500 V <sub>AC</sub> - 50Hz (1050 to 1740 V <sub>AC</sub> ) 1500 V <sub>DC</sub> (900 to 1950 V <sub>DC</sub> ) 3000 V <sub>DC</sub> (2000 to 4000 V <sub>DC</sub> )
Control input voltage	24 V <sub>DC</sub> (with autostart at < 16.8 V <sub>DC</sub> and HV input online)
24 V <sub>DC</sub> output	
Rated output voltage	28 V <sub>DC</sub>
Rated power output	8 kW
Maximum battery charging current	95 A
Electronic protection	overload and shorting

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230 V <sub>AC</sub> output	
Rated output voltage	230 V <sub>AC RMS</sub>
Rated power output	5 kVA at $\cos\phi \geq 0,8$
Output frequency	50 Hz
Voltage waveform	sine
Electronic protection	overload and shorting
230 V <sub>AC</sub> voltage output from on-board battery bank upon converter HV input voltage outage	
General parameters	
Maximum power rating	13 kW
Device temperature class: T1 ref. PN-EN-50125-1:2002	-25°C ÷ +40°C
Cooling	-25°C to +40°C natural (convection) with ambient air
Protection rating	IP54
Size [L x W x H]	1500 x 676 x 600 mm
Weight	310 kg (± 10 kg)

## DESIGN

The converter is installed in a sealed and robust aluminium sheet enclosure which houses all electrical and electronic equipment of this device. The enclosure box is preserved with a powder-coat finish for improved protection against operating conditions. Service access is assured by a swing-open cover, formed by a high-performance aluminium heat sink.

The heat sink provides natural cooling with the ambient air stream.

The electrical connections are housed in separate bays on the enclosure short sides for easy access and protection against penetration of the enclosure by contaminants and moisture.

All device materials meet the relevant standards for non-flammability, safety of use and environmental protection.

The advanced technical solutions applied in the device (high operating frequency of the power processing line, nanocrystalline core transformers, special contact-free Hall effect voltage and current sensors, and fibre optic-based control lines) assure environmentally-friendly operation of the device (with a negligible noise level that is virtually inaudible to passengers and crew), high resistance to operating shorting and overvoltages within the on-board systems, and high operating durability, reliability and stability.

The conducted interference levels are limited by filters on the converter outputs for assured EMC compliance.

The connections of the converter with the on-board systems include:

- HV X1 screw terminals (2 x M8 terminals) installed in a separate terminal box.
- Harting connectors grouped in two terminal units:
  - X2 power output unit,
  - X3 control, data and AC outputs.

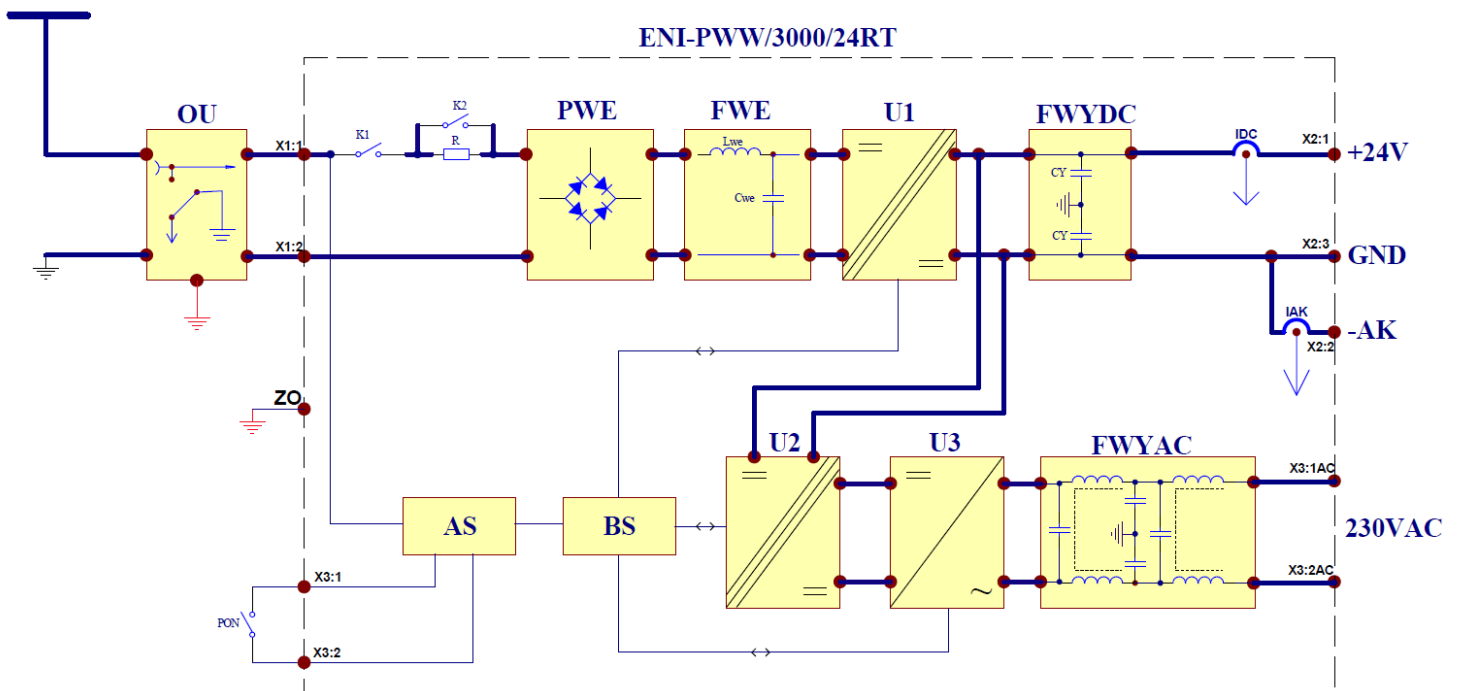
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### OPERATION

The converter transforms the UIC-550 compliant railway contact system voltage into stabilised  $24 V_{DC}$  and  $230 V_{AC}$  output voltages. The power transformer installed on the inverter U1 line provides galvanic separation of the converter inputs from the converter outputs. The voltage output stability, battery charging current control and overload and shorting protection are assured by the converter control block BS. The control block BS stabilises the AC and DC voltage outputs irrespective of the converter voltage input variations or the on-board loads. The diagnostic circuit monitors the performance and operating readiness of the entire device; should any component fail, the device is stopped and a failure alarm is indicated.

### BLOCK DIAGRAM



OU - odłącznik uszyniający, zabezpieczenia  
 AS - Autostart  
 PWE - Przetwornik wejściowy  
 FWE - filtr wejściowy.  
 U1 - moduł falownika WN z izolacją galwaniczną.  
 U2 - moduł falownika napięcia pośredniego z izolacją galwaniczną  
 U3 - Falownik AC  
 BS - blok sterujący  
 FWYDC - filtr wyjściowy wyj.DC  
 FWYAC - filtr wyjściowy wyj.AC