Redesign DC/DC-converter for public transit vehicles

Requirements have been made tougher for electrical and electronic equipment in public transit vehicles in terms of life, reliability, freedom from faults, long-term operations and availability.

This power supply is a redesign of the original Siemens module and meets or exceeds the fundamental standards (EN 60950, Ul60950).

The devices are made to be pin and functionally compatible replacement for the Siemens DC/DC converter E44010 A5700 L07C. It has a modular structure.

The input modules for the galvanic separation of the input/output voltage are designed for nominal 24 DC current. Separation voltage UE//UA 1500V.

Redesign

The working ranges of the DC/DC converter modules range from 16V to 36V and the modules are also equipped with active transient protection, which safely eliminates the specified overvoltage (for 20mS) of two times the nominal input voltage of up to 48V and transients of up to 1000V//50μs.

The module has diverse voltage and current monitoring circuits which are set to low levels at the binary outlets if:

- the input voltage is <UE min or the output current is > IA max
- the output voltage < or > UA planned, the light diode will extinguish on the front plate
- the load current exceeds the maximum value 4A, or the input voltage fails to reach the UE value, the status shall be stored and issued via a binary outlet.

The MTBF of the DC/DC-converter module is > 350,000 h, which meets the life requirements for railway equipment of 24/d for 30a.

The 19" 3HE insert meets the requirements for vehicle applications and is extremely robust and can resist a vibration load on three axels with an amplitude of 7.5mm at 5-150Hz and acceleration of 20m/s².
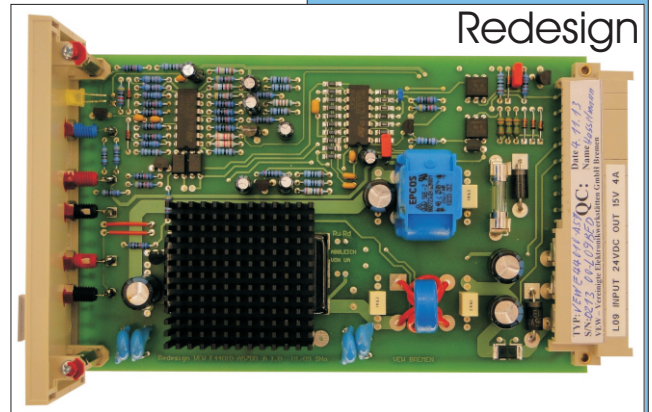
Technical data:

PCB-card	: 19" insert 100x160mm
	Frontplate 9TE 3HE, Siemens, with handle
Plug-in	: DIN 41612 24F + 7H, z+b+d
Supply voltage	: nom. 24 DC, min. 16V DC, max. 36V DC
Power	: max. 60VA
Efficiency	: ca. 85%
Temperature range	: -40... +85°C, derating from 60°C
Output	: 15V DC; 4A, galvanic separated to UE
Controls/	: UE < UE min; UA < UA desired value;
Control output	UA > UA dv; IA > IA max, stored
Remote input	: UA off

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