



REGIONAL MULTIPLE-UNIT TRAIN PROTOS®

ELECTRICAL EQUIPMENT

Protos® is a regional multiple-unit train from Fahrzeugtechnik Dessau and the reference project of Kiepe Electric in the market for regional trains. As system partner, Kiepe Electric has supplied the electrical equipment for the prototypes as well as the five two-part series vehicles.

These train cars were constructed to serve as modular vehicles in regional transport, in order to gain a level of flexibility which makes it possible to meet the most varied customer demands. Since the autumn of 2007 they have been used by Connexion in the Netherlands on the Amersfoort–Ede–Wageningen line, with an annual travel distance of 250,000 km.

The electrical equipment from Kiepe Electric follows the modular line of the vehicle and is suitable for a widely varying range of customers, route and vehicle body requirements. Kiepe Electric was responsible for the conceptual design, planning, delivery and assembly of the drive technology. The over-all scope of delivery included traction converters, motors, brake resistors, power supply systems with collectors, main contactors and auxiliary supply units. Furthermore the heating, ventilation and air-conditioning technology, the train control system and the electrical switching, operating and displaying devices in the driver's cab.



KIEPE ELECTRIC

VEHICLE DATA

Model	Two-part multiple unit for two-direction operation, capable for multiple operation
Type	PROTOS*
Track width	1,435 mm
Maximum speed	160 km/h
Starting acceleration	1.0 m/s ²
Line voltage	DC 1500V -30% / +20%
Wheel arrangement (series production)	
	2'Bo' + Bo'2'
Vehicle body length over coupling	54,500 mm
Width / height above top of rail	2,820 mm / 4,580 mm
Pivotal Distance / Bogie axle base	19,000 mm / 2,500 mm
Boarding height above top of rail	810 mm
Vehicle mass in compliance with DIN	105 t (empty) + 24 t (2/3 charge)
Seats	170, davon 16 in der 1. Klasse
Wheel diameter, new / worn	760/680 mm
Drive concept	Four traction motors each with a traction converter
Braking concept	Blending between the electrodynamic and pneumatic brake system
Traction converter	
Type	Kiepe DPU 702
Features	air-cooled, forced-air cooled
Rated output	500 kW
Control equipment	Traction Drive Control Module (ASM), Static Inverter Drive Control Module (USM)
Traction motor	
Type	VEM – DKLBZ 0911-4A
Design	air-cooled, forced-air cooled
Rated output	360 kW
Rated voltage / frequency	1080V / 64 Hz
Rated current	230 A
On-board power system	
Kiepe DPU 702	3 AC 400V, AC 230V, 50 Hz
Kiepe BNU 518	DC 24V
Battery	2 x 420 Ah
Control equipment	Central Control Unit (ZLG), BISS Control Module (BSM)
Train safety system	ATB NL EG
Heating/Ventilation/Air-conditioning	
Type - driver's cab / passenger room	Kiepe HKL 308 / Kiepe HKL 341

Subject to change without notice.

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