



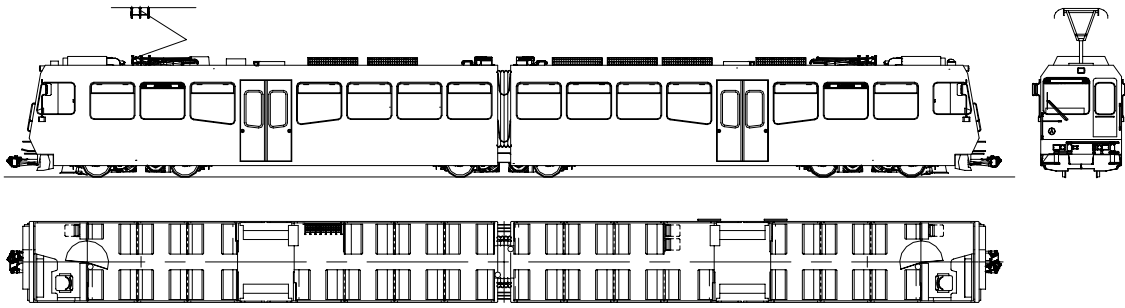
Rack and adhesion double unit railway for the Bavarian Zugspitzbahn Bergbahn AG (BZB), Germany

The route leads to the end of the line at the "Zugspitzplatt" (plateau of Zugspitze - 2600 m above sea level). The Zugspitze, with its peak at 2964 m above sea level, is the highest mountain in Germany. It is among Germany's most popular destinations for excursions. The 18.7 km route, 6 km of which are in tunnels, with a maximum gradient of 250 ‰, was opened in 1930 after only two years of construction, and goes from Garmisch via Grainau and Eibsee to Zugspitze. Thanks to the powerful all-axle drive, the vehicle is able to push along an unmotorized car, so that all supply goods can be transported by rail up Germany's favourite mountain.

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Technical features

- Bright, passenger-friendly interior with customized design
- Air-conditioned passenger and driver compartments
- Destination displays and passenger information system with screens, video monitoring
- Spacious multipurpose area in entrance section
- Vehicle body of light steel construction
- Minimum curve radius of 80 m
- Powerful drive equipment consisting of three IGBT power converters and six self-ventilated asynchronous motors
- Selectron MAS control system with colour display in the driver's compartment
- Fire alarm and fire-fighting system in accordance with the fire protection regulations for tunnel operation
- Train protection system
- Remote-controlled front doors for evacuation in the tunnel

Vehicle data

Customer	Bavarian Zugspitzbahn Bergbahn AG (BZB)
Lines operated	Garmisch-Partenkirchen – Grainau – Zugspitzplatt
Gauge	1 000 mm
Designation	DTw 12, 14 – 16
Catenary supply voltage	1 650 Vdc
Axle arrangement	Bo' Bo' Bo'
Number of vehicles	4
Service start-up	2006
Seating capacity	102
Fold up seats	4
Standing capacity	74
Floor height	
Low floor	950 mm
High floor	1 100 mm
Door width	1 600 mm
Longitudinal strength	400 kN
Overall length	30 600 mm
Vehicle width	2 500 mm
Vehicle height	3 450 mm
Tare weight	62 t
Bogie wheelbase	2 720 mm
Trailer wheel diameter (new)	875 mm
Maximum output at wheel	1 680 kW
Starting tractive power	300 kN (Rack railway) 140 kN (adhesion)
Maximum speed	uphill 30 (40) km/h downhill up to 140 ‰ 20 km/h 140 to 250 ‰ 15 km/h adhesion 70 km/h

