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*Ingenuity for life*

## Avenio M tram – Ulm, Germany

Twelve five-section,  
100 percent low-floor vehicles

Siemens is one of the leading suppliers of integrated mobility solutions for urban areas and of vehicles for local, regional, and main-line transportation.

Ulm's municipal utility (Stadtwerke Ulm) ordered twelve trams from Siemens for its local line network. The new trams will be used on the future Line 2. This new Avenio M tram series profits from the reliable multi-articulated concept and the proven experiences with Avenio trams in The Haag and Munich. In both cities, the trams are already in successful operation.

The trams will be delivered by the middle of 2018. Each tram consists of five modules, three short bogie car modules, and two intermediate modules. These five modules together create a completely open and bright interior. The one-way concept provides a driver's cab at the front and an auxiliary operator's cab at the rear end.





### Technical data

Vehicle type / platform	100% low-floor, tram vehicle / Avenio M
Configuration	5-car (uni-directional operation)
Wheel arrangement	Bo' 2' Bo'
Car body material	Aluminum welded
Length	31,470 mm
Width	2,400 mm
Entrance height / floor height	305 mm / 380 mm above bogies
Motor power rating	4 x 120 kW
Power supply	DC 750 V
Maximum speed	70 km/h
Track gauge	1,000 mm
Capacity (4 P/m <sup>2</sup> )	185 incl. 69 seats
Tare weight	approx. 38 tons

### Technical properties / special features

- Excellent passenger comfort achieved by open, bright interior with seats and handrails optimally designed according to ergonomic criteria, air-conditioning for driver's cab and passenger area, and optimized running characteristics with three suspension stages
- Convenient access for passengers with large multi-function areas for wheelchairs and strollers and quick passenger flow ensured by wide doors (four double doors 1,300 mm, two single doors 800 mm)
- Weight-optimized vehicle design compliant with limited axle load in existing networks, also ensures a maximum passenger capacity (welded aluminum car body)
- Perfect riding comfort and optimized wheel-track wear achieved by bogies with installation of drive unit and mechanical coupling of the wheels in longitudinal direction, minimal unsprung masses, and optimized bogie-to-car-body coupling
- Highest safety ensured by four independent brake systems enhanced by a special braking assistance system in the vehicles to safely run on the long slopes in Ulm's networks, providing a fallback layer in the event of vehicle power supply failure
- Compliant with newest safety standards (EN15227, EN 45545)
- Electro-dynamic brakes to provide comfortable and smooth braking to standstill
- Redundant design of traction equipment provides maximum reliability and fail-safe performance (two IGBT pulse inverters, two traction control units SIBAS® 32)



Traction inverter



Traction unit



Bogie

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