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Avenio – a rapid ride as tram or light railway

Our 100% low-floor trams made specially for you:
Avenio – fits your city.

Avenio – fits your city. Made for where you live.

A new dimension in the 100% low-floor tram category awaits your discovery: the Avenio family, including the Avenio and Avenio M. Whether innovative single-articulated or flexible multi-articulated tram – Siemens has created unique vehicles that are simply made for your city.

As individual as your city

Your city is unique – and so are your requirements for public transportation. The Avenio family offers you solutions that are as individual as your city. It fits harmoniously into your cityscape and adapts to your existing infrastructure – as an extraordinarily comfortable single-articulated tram with light-rail character, or a highly-flexible multi-articulated tram for the most complex track geometries. They meet every capacity requirement from S to XL and even XXL, with interior layout and exterior designs that are perfectly aligned to your specific needs. In these ways and more, the Avenio family fulfills its promise to “fit your city” in every respect.

As attractive as they are comfortable

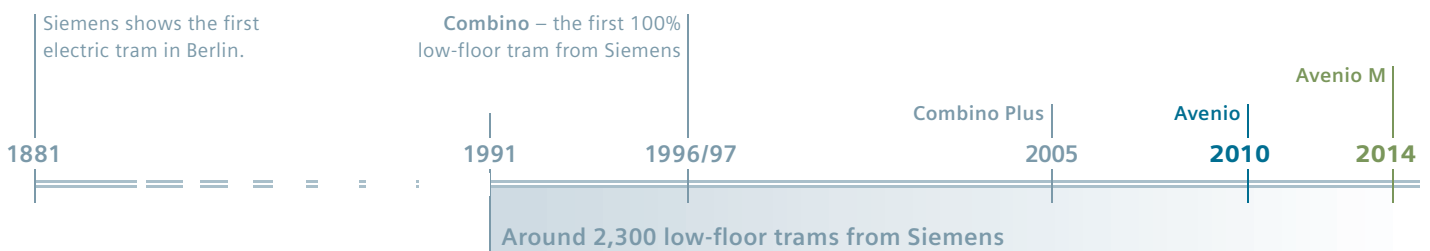
One family, two lines, many success factors – both Avenio and Avenio M set the standards in their categories. Passengers and drivers will enjoy the comfortable ride, and residents will appreciate the lack of noise. Every responsible city dweller will welcome green mobility, while operators will value the combination of design, comfort, and cost efficiency.

Reliability based on experience

Such world-class performance is the result of Siemens' unique experience accumulated over more than 130 years: We invented the first electric tram in 1881 and have been successfully using 100% low-floor technology for almost 25 years. This experience, plus comprehensive field research conducted in more than 20 highly disparate tram networks were the ideal groundwork for the Avenio single-articulated tram. And now we've added a second line: the Avenio M multi-articulated tram – a further development of the world's first modular tram platform combined with the successes of the Avenio generation.

The name Avenio represents a synthesis of proven components and new ideas, of perfected technology, targeted improvements, and effective innovations. It's a winning combination that makes the Avenio family not only comfortable, economical, and attractive, but also reliable right from the very first day.

See how the Avenio family is made for your city.



**Avenio –
the reinvention of the tram:**
a single-articulated vehicle
combined with the advantages
of a multi-articulated concept



**Avenio M –
the evolution of the tram:**
a proven multi-articulated concept
combined with the experience of
the Avenio generation

Made for any infrastructure – and every network

Many cities suffer from a shortage of parking space and traffic gridlock, and struggle to meet stricter emission guidelines. They would be only too happy to reintroduce trams, but worry that 100% low-floor trams would require massive investments in infrastructure. The Avenio demonstrates that this is not necessarily so. Existing lines and bridges can still be used without having to renovate tracks or reinforce bridges, let alone avoid tunnels.



Old tracks – a new approach

Even an unfavorable infrastructure like narrow streets, old lines, and winding tracks is no obstacle for the Avenio. Thanks to its concept, bogies and wheels react smoothly to every motion without stressing the car body. And thanks to this design, the evenly distributed axle loads are the lowest of any 100% low-floor tram. As a result, the Avenio glides elegantly across the bridges of your city without exceeding permissible axle loads.

Unique concept – unprecedented comfort

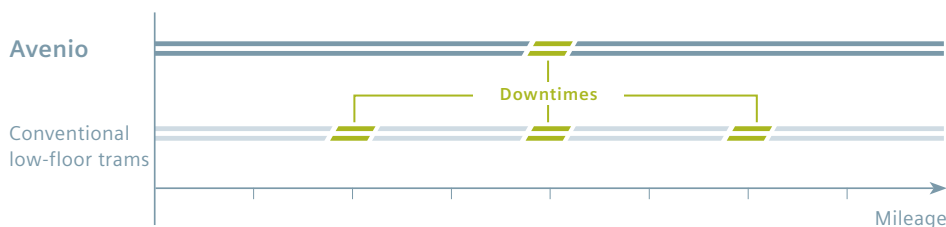
The Avenio's standard combination of symmetrical load distribution, harmonic track guidance, and balanced interplay of forces not only reduces wear and tear on tracks and bridges, but also makes the tram a totally new experience. Drivers and passengers can enjoy quiet, jolt-free travel without being forced into uncomfortable positions on curves. Meanwhile, residents can also look forward to the convenience of trams at their doorstep without the screeching of wheels and other noise usually associated with trams.



Higher availability – lower maintenance requirements

In the Avenio, forces work together rather than in opposition – and this extends the life of important components. A striking example are the tires. On conventional low-floor vehicles these often have to be changed after 100,000 to 250,000 kilometers. Tires on the Avenio, in contrast, last two to three times as long. This does not only reduce maintenance and labour cost but also reduces the required number of spare vehicles, since operation has to be continued also during the period when vehicles are taken out of service for maintenance works.

The Avenio environmental bonus:
 The Avenio runs extremely quietly, even on older tracks, thanks to the low wheel-rail loading. In addition, a large number of noise-abating measures have been implemented, for example, “silent” electric brakes that slow the tram down to a stop, resilient tires, and auxiliary units that are throttled back or switched off completely when the vehicle is at a standstill. Siemens has even eliminated the high-pitched noise from the traction units.



The Avenio’s concept increases the service life of the tires and so considerably reduces downtimes for maintenance. The graphic shows the maximum mileage before the next shop visit compared to other low-floor vehicles.

Designed for any need – and for more passengers

High capacity, fast passenger boarding and disembarking, fast tempo – the Avenio helps you redefine efficiency in regional transport. Thanks to the use of a modular concept throughout, Siemens can offer you exactly the right vehicle for your requirements, from the compact 18-meter tram to the longest tram in the world. Up to 30% of the vehicle's length can be fitted with wide doors, optionally on one or both sides.



From 18 to 72 meters

Only the Avenio concept allows a flexible configuration with standard car modules of nine meters each, from two to eight units, from 18 to 72 meters in length. Your capacity requirement alone dictates the right choice for you. In the Avenio maxi version, one driver transports more than 540 passengers from A to B comfortably and with plenty of leg and elbow room. At full loading, it can easily accommodate 700 passengers to cover peak loads in the case of special events.

Fast boarding and alighting

In order to ensure that even very large numbers of passengers can board and disembark quickly, the Avenio concept also offers a solution that is not available with every 100% low-floor tram. Wide double doors can be installed on both sides and over the entire length of the vehicle, even directly behind the driver's cab. The Avenio is a true miracle when it comes to space, with 16 fully usable seats in the chassis zone and additional standing room in the generously dimensioned articulated sections. All this in a tram with an end-to-end gangway and a transparent layout where your passengers will feel comfortable and safe.

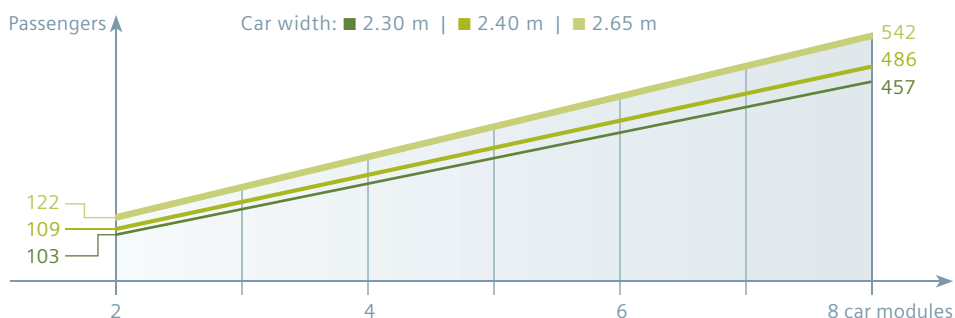


From tram to light railway

Naturally, transport performance is also a question of speed. Where the distances between stops become longer in the suburbs, the Avenio can easily accelerate to 80 kilometers per hour, because it can not only travel smoothly through curves but also rapidly and quietly on straight stretches. High speed means shorter turn-around cycles, allowing a leaner vehicle fleet. That pays dividends, not just with regard to procurement but also proportionally when it comes to maintenance.

The Avenio environmental bonus:

Despite its powerful transport performance, the Avenio hardly leaves a trace. There is no air pollution from brake abrasion, and the small quantity of lubricants it needs are biodegradable. It also minimizes electromagnetic radiation. And when, after 30 years or more, the Avenio reaches the end of its service life, its components are more than 90 percent recyclable.



A choice of three different vehicle widths, trams with two to eight modules – that's flexibility à la Avenio. The graphic shows how many passengers can be accommodated in the various configurations. The basis for calculation in each case is a bidirectional vehicle with standing spaces that accommodate four passengers per square meter.

Made for your city – and your budget

Design, comfort, economy: the Avenio reconciles these apparent contradictions to create a convincing and attractive whole. With its elegant exterior design and distinctive appearance, it integrates harmoniously into your cityscape. Your passengers will love its design and comfortable ride – and its cost efficiency will satisfy any hardnosed accountant.



Freedom through intelligent design

Thanks to its clean lines and its eye-catching front end, the Avenio is an attractive feature of the street scene. This impression continues inside with the bright, step-free, transparent passenger compartment. Large doors and panoramic windows give it a friendly, inviting ambience. Many details, including visibility throughout the entire passenger compartment, smart door monitoring, and the view of the driver give your passengers a sense of security. And as far as the cityscape is concerned, good ventilation allows passengers to enjoy the view even in wet weather.

Opening the way for low costs

Does attractive, intelligent design really need to be expensive? The Avenio proves the opposite to be true. The Avenio concept in particular allows appreciable cost savings over the entire lifecycle.

Energy costs are just one example. Thanks to low axle loads and the ample weight reserves this provides, an optional energy store can be integrated onboard. Along with other measures, this helps cut energy use by up to 30%, a high, ongoing cost savings.

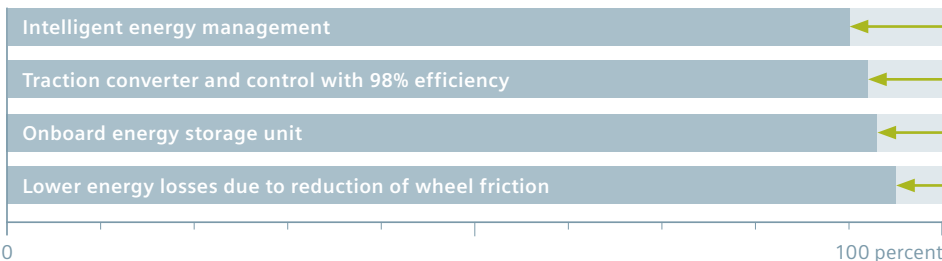


A clear view of the sights

The Avenio is designed to make beautiful cities even more attractive. An overhead line would look out of place near time-honored buildings or along leafy avenues. Using energy stored on board, which can be recharged in less than a minute, the Avenio can also be operated without contact lines – not just across complex intersections, under low city gates, through tunnels, and under bridges, but also over longer distances.

The Avenio environmental bonus:
 An efficient use of energy helps keep cities beautiful and green. The Avenio can, for example, store and re-use valuable braking energy, instead of dissipating it as heat. It also helps significantly reduce the CO₂ footprint of your city.

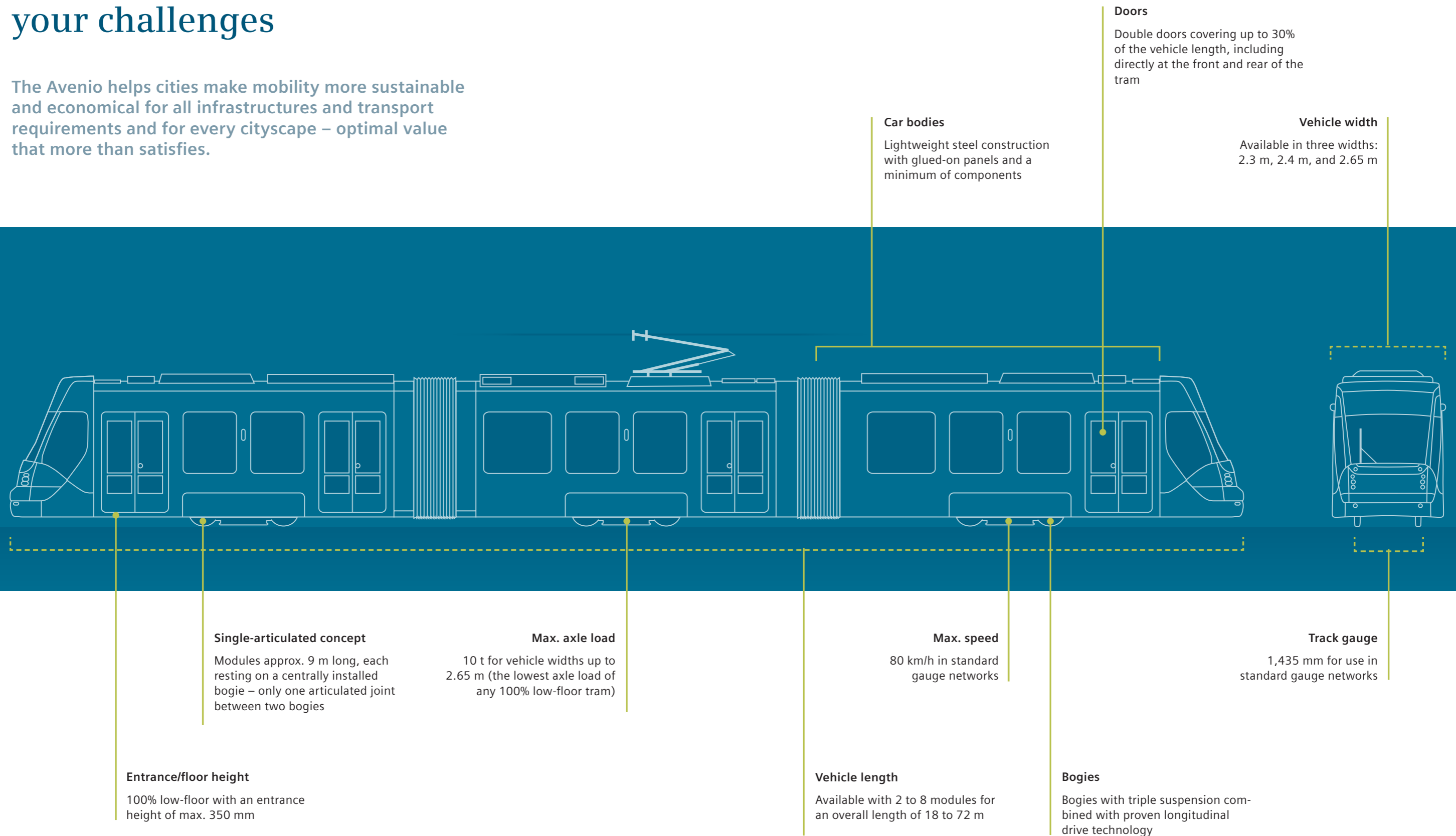
Total savings of up to **30%**



The Avenio can reduce energy use by up to 30 percent through the combination of different standard and optional features.

Avenio – made to meet your challenges

The Avenio helps cities make mobility more sustainable and economical for all infrastructures and transport requirements and for every cityscape – optimal value that more than satisfies.



Doors

Double doors covering up to 30% of the vehicle length, including directly at the front and rear of the tram

Car bodies

Lightweight steel construction with glued-on panels and a minimum of components

Vehicle width

Available in three widths: 2.3 m, 2.4 m, and 2.65 m

Single-articulated concept

Modules approx. 9 m long, each resting on a centrally installed bogie – only one articulated joint between two bogies

Max. axle load

10 t for vehicle widths up to 2.65 m (the lowest axle load of any 100% low-floor tram)

Max. speed

80 km/h in standard gauge networks

Track gauge

1,435 mm for use in standard gauge networks

Entrance/floor height

100% low-floor with an entrance height of max. 350 mm

Vehicle length

Available with 2 to 8 modules for an overall length of 18 to 72 m

Bogies

Bogies with triple suspension combined with proven longitudinal drive technology

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required features should therefore
be specified in each individual case
at the time of closing the contract.