



Mobility today is facing myriad challenges. The volume of traffic is increasing, and with it the demands of modern railway operators. A connection needs to be fast, punctual and absolutely safe. This calls for flexible, functional systems that allow an improved utilization of available resources. Systems that are highly available and reliable to ensure profitable and cost-effective operations – while ensuring sustained customer satisfaction.

These higher expectations and requirements have been taken into account in the design of the Desiro ML.

It enables the operators to implement new, innovative traffic concepts in commuter, regional and Interregio traffic. With a maximum speed of 160 km/h and high acceleration, the Desiro ML is perfectly equipped for these tasks and allows various train configurations, traction systems and customized, versatile outfitting variants for specific traffic applications.

#### Technical data

Wheel arrangement	EMU: Bo'Bo'+2'2'+Bo'Bo' DMU: Bo'2'+2'2'+2'Bo'
Track gauges	1,435, 1,520 and 1,668 mm
Maximum speed	160 km/h
Traction power	EMU: 1,300 kW / 2,600 kW DMU: 800 kW / 1,200 kW
Starting acceleration	EMU: up to 1.1 m/s <sup>2</sup> (3-car train) DMU: up to 0.8 m/s <sup>2</sup>
Power supply	15 kV AC, 25 kV AC, 3 kV DC, diesel-electric
Length (over coupling)	70,930 mm (3-car train)
Floor height	EMU: 600 mm, 800 mm, or 1,000 mm DMU: 600 mm or 800 mm
Number of entrances at floor height	600–800 mm: 1 – 2 entrance areas per car 1,000 mm: 2 – 3 entrance areas in end car 2 – 4 entrance areas in intermediate car
Tare weight	EMU 132 t DMU 129 t (3-car train with standard equipment)
Maximum axle load	< 17 t
Crashworthiness	TSI 1, 2, 3 and 4
Fire protection	to pr EN 45545 and DIN 5510 Level 2

# Desiro ML

The New Multiple Unit for Use in  
Commuter, Regional and Interregio Traffic



2-car train, 1 door per car



2-car train, 2 doors per car



3-car train, 1 door per car



3-car train, 2 doors per car



4-car train, 1 door per car



4-car train, 2 doors per car

The Desiro ML also offers a variable, low-floor seating arrangement as well as spacious entrance and gangway areas, an attractive, innovative design and maximum riding comfort.

With its combination of state-of-the-art technologies and service-proven equipment and compliance with the requirements of current standards governing crashworthiness and environmental compatibility, the Desiro ML is setting new standards in modern rail service.

#### Low life cycle costs

- Attractive price-performance ratio
- Low energy consumption and low maintenance costs
- Optimum train configuration for the different traffic applications
- High residual value due to easy adaptation of the vehicle features (e.g. interior furnishings, number of doors, floor heights), enabling these features to be customized even after several years of operation

#### The Desiro ML train concept

The Desiro ML is designed basically as a 2-car unit that can be extended by adding intermediate cars, i.e. the operator can change its configuration in the depot by inserting or removing intermediate cars as required. This allows him to adjust the passenger capacity to specific operating requirements and to form trains with as many as four cars.

The floor height can be set at 600 mm, 800 mm or 1,000 mm. A retrofit option for raising the floor from 600 to 800 mm is also possible. The installation of large components on the roof makes more useable space available in the interior.

Thanks to their low-floor entrances, the trains afford convenient, barrier-free boarding for passengers, for families with baby carriages and for passengers in wheelchairs. Spacious entrance areas with 1,300 mm-wide doorways and optionally wider gangways also permit quick and safe boarding and exiting. This is another area where the new Desiro ML proves its flexibility, for the number of entrances to the car is variable. One or two entrance areas can be configured for the floor heights 600 and 800 mm, while two or three entrances can be provided in the end car and two to four in the intermediate car for a floor height of 1000 mm.

#### Train length and number of seats for different train configurations

Configuration	2-car	3-car	4-car
Train length	48.4 m	70.9 m	93.3 m
Number of seats	120 – 184	184 – 284	248 – 384

## Interior design

The passenger should feel comfortable, which is why the Desiro ML is designed to meet the expectations for attractive mass transit. Different variants of interior furnishings offer a modern, trendsetting design and flexible options for adapting seat spacing and seating arrangements.

Multifunctional, multipurpose areas offer sufficient space for a modern, wheelchair-accessible toilet and for the storage of oversized baggage and bicycles.

The passenger compartments are equipped with thermal insulation glazing. Combined with the attractive design, the construction of the train's interior creates a spacious ambience, coupled with comfort and safety. This is ensured, for example, by pleasant, extensive lighting and appealing, timeless color schemes.

The powerful and reliable air-conditioning system ensures a comfortable environment and responsive temperature control, with the cold air gently entering the passenger compartment through an integrated perforated ceiling.

The passengers are informed by means of display and announcements via an advanced visual and acoustic passenger information system, which is available in many predefined variants that can be adapted to specific requirements of the operator.

Safe operations are also ensured by an optimally designed work area for the train driver. For this reason, the driver's cabs are designed for easy operation based to the latest in ergonomic design. This includes a comfortable, adjustable driver's seat as well as the support through a user-friendly, on-board diagnostics system.



### Drive system

The Desiro ML has a powerful drive system with up to 2,600 kW of tractive power for the EMU versions. With up to eight powered axles, this traction can already be transmitted with a low coefficient of adhesion.

A diesel-electric propulsion system can also be installed to create a DMU. It delivers 1,000 kW of tractive power with four powered axles.

### Bogies

The bogies of the Desiro ML are derived from the service-proven SF 6000 family. They are equipped with secondary air suspension for increased passenger comfort.

### Vehicle control equipment

The reliable Sibas® 32 train control system communicates via the redundant Train Communication Network (TCN) and the Multifunction Vehicle Bus (MVB) with the distributed peripheral units (including brake control units, door controls). In multiple running mode, the communication between the individual sections of the train occurs via the Wire Train Bus (WTB). Additional train lines (e.g. for door control) further increase the safety of the system.

### Key vehicle features:

- 2- to 4-car multiple unit with an adjustable number of intermediate cars
- Train configuration can be modified by the operator in the depot (by adding / removing intermediate cars)
- Floor heights of 600 mm, 800 mm or 1,000 mm; optional retrofit of floor height from 600 to 800 mm possible
- Maximum speed 160 km/h
- Power supply 15 kV AC, 25 kV AC, 3 kV DC, diesel-electric
- Low life cycle costs, flexibility offer high degree of reusability
- Based on European standards (TSI)
- Modular vehicle concept, basic design with various predefined variants for customization
- Modular interior design (e.g. basic design, comfort, service)
- Variable number of exterior doors and variable passenger capacity
- Short downtimes due to the replacement of crash modules

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