

METRO

METROPOLIS

Continuously improved to serve the cities

Drawing on an impressive track record in meeting customer expectations, Alstom is recognised worldwide as the provider of reliable and efficient metro trains.

MAJOR REFERENCES

- Amsterdam** (The Netherlands)
- Barcelona** (Spain)
- Budapest** (Hungary)
- Buenos Aires** (Argentina)
- Chennai, Kochi, Lucknow** (India)
- Guadalajara** (Mexico)
- Istanbul** (Turkey)
- Lima** (Peru)
- Nanjing, Shanghai** (China)
- Panama City** (Republic of Panama)
- Rio de Janeiro, São Paulo** (Brazil)
- Riyadh** (Saudi Arabia)
- Santiago** (Chile)
- Santo Domingo** (Dominican Republic)
- Singapore** (Singapore)
- Sydney** (Australia)
- Varsaw** (Poland)

KEY FIGURES

- More than 5,000 cars sold
- More than 22 cities
- 360 driverless Metropolis trains sold since 1998

GENERAL DESCRIPTION

Metropolis is a full range of metro trains, all relying on Alstom's proven technologies from decades of experience: more than 17,000 Alstom metro cars are operated currently in the world by more than 50 customers.

Alstom has implemented some of the first driverless metros in the world, such as Lille Metro in the 80s and the first driverless heavy metro in Singapore in 2003.

This extensive track record is the best demonstration that Alstom respects its commitments to its customers.

CUSTOMER BENEFITS

Customisation options

- Broad range of configuration possibilities, eg, length, width, shape, seating arrangement, passenger information, security equipment
- Wide range of design possibilities: cab design, livery, filmed carbody, interior finishings from Alstom's own Design & Styling department
- Driverless mode and driver mode

Passenger experience

- High quality commuter experience: low internal noise, full glass doors, large windows and LED lighting
- Optimum passenger flows: wide doors, large gangways, dedicated areas for people with reduced mobility
- Dynamic route map, large LCD screens, innovative features for passengers such as LED indication of door opening and closing, USB plugs, onboard Wifi.

Efficient operation

- High level reliability and availability
- Innovations to reduce energy consumption, eg, full electrical braking to standstill, HVAC regulation based on passenger load, new silicon carbide technology for auxiliary converters, full LED lighting
- Low lifecycle costs: extended maintenance intervals, easy maintenance and cleaning, TrainTracer monitoring
- Flexibility for operations: multiple-units, constant door pitch all along the train, train expansion by insertion of additional cars



TECHNICAL RANGE

Width*	From 2.7m to 3.2 m
Length*	From 18 to 24 m
Number of doors per side	3 to 5
Passenger capacity (6p/m ²)	Up to over 300 passengers per car
Seating arrangements	Longitudinal, Transversal, Mixed
Bogies max. axle loads	14,5 t /17 t
Bogies max. axle loads	80 km/h to 100 km/h
Supply voltage	750V _{DC} , 1500V _{DC} , 3000V _{DC} , 25kVac
Carbody material	Aluminium or Stainless steel
Power supply	By catenary or 3rd rail
HVAC	Roof integrated HVAC
Track gauge	1435 mm, 1600 mm

* Other widths and lengths available on case by case basis

TRAIN CONFIGURATIONS

2 car trainset: 100% (2M)



3 car trainset: 66% (2M-1T) / 100% (3M)



4 car trainset: 50% (2M-2T) / 75% (3M-1T) / 100% (4M)



5 car trainset: 60% (3M-2T) / 80% (4M-1T) / 100% (5M)



6 car trainset: 50% (3M-3T) / 66% (4M-2T) / up to 100%



EXTERIOR & INTERIOR DESIGN

Alstom's own Design & Styling department to assist operators in determining the ideal exterior: bodyshell shape, gauge, car dimensions, livery.

COMPONENTS

Metropolis fitted with Alstom's proven traction systems (Onix, Optonix), TCMS and bogies (B23, B20)

DRIVERLESS METRO

- Full driverless GoA4
- Driverless - ready solutions (removable driver cab)
- With Alstom Urbalis or other signalling systems

PASSENGER INFORMATION & SECURITY

- Line map display
- LCD display
- Text display
- Speaker
- Surveillance camera (CCTV)
- Intercom
- Innovative features such as USB plugs, Wifi

DRIVER CAB

- Independent driver cab air conditioning
- Ergonomic driver's desk and seat
- Enlarged side window

ECO DESIGN

Recyclability: up to 96%

Use of clean materials (water soluble paints, REACH compliance)

PREDICTIVE MAINTENANCE

TrainTracer on-line tool to continuously monitor train's main components and bring information on each train's condition in real-time to depot and OCC.

TURNKEY SYSTEM APPROACH

Complete system capability, including signalling, electrification, trackworks, as well as maintenance services.



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