

LIGHT RAIL VEHICLES

CITADIS X05

LATEST EVOLUTION OF CITADIS



Alstom's Citadis is the low-floor tram reference for modern urban solutions and is at the core of multiple city renewal projects.

Citadis was upgraded to deliver extra dimensions, capacity, flexibility, speed and passenger experience, to allow higher frequency throughout the day and thereby increase the number of people an operator can carry on a network per year.

GENERAL DESCRIPTION

Citadis X05 offers new choices on tram dimensions and configurations (in single-unit or double-unit operation), performance, comfort level and special features met by a system of service-proven modules that fit together. Innovations include: integration of new technologies for lower energy consumption (Permanent Magnet Motors); easier sub-system integration and maintenance which reduces LCC; higher speed of up to 80 km/h; operable on existing and new tracks; catenary-free range (besides APS) now incorporating new full on-board autonomy systems - optimized and completely integrated. All these new technological advances offer cities of all sizes the highest performance tramway solutions - in order to meet the current and future evolving mobility challenges.

CUSTOMER BENEFITS

High degree of passenger comfort and convenience

New levels of comfort include spacious design with double doors (15% passenger exchange ratio increase), 40% more window surface, ergonomic seat design option, real-time information on-board, direct & indirect lighting based on LED technology - all leading up to a more pleasurable urban commuter experience.

Advanced catenary-free offering

Alstom's solutions span most service-proven APS and Citadis Ecopack full on-board autonomy management system composed of the latest generation super-capacitor and batteries. Key advantages of Alstom's catenary free solutions: preservation of the aesthetics of city centres; unlimited power supply; high performances (matching catenary performances), high availability (99.95% on 2-km double track applications); robustness and limited impact on infrastructure.

Lower OPEX

11% reduction of maintenance costs based on technical innovations including: optimized monitoring system through a Design to Serviceability process; Ethernet network for a quick download of monitoring data from a single access point for the upload of infotainment and passenger information system in manual or automatic wireless mode.

Up to 25% reduction in energy consumption thanks to latest design improvements :

- Proven ONIX traction drive with closed self-ventilated Permanent Magnet Motors (PMM) highly efficient (96%)
- Optimized HVAC function (air flow, passenger load, ...) and auxiliaries (auxiliary with variable frequency)

KEY BENEFITS / KEY FIGURES

- 2,600 Citadis vehicles sold to 60 cities worldwide
- Over 300 Citadis X05 ordered
- 2,300 Citadis vehicles in service
- 20 billion passengers transported, Over 4 million per day
- 1 billion km run by the Citadis vehicle fleets
- 1 out of 4 low-floor trams in service worldwide manufactured by Alstom
- 33 % of catenary-free lines in operation and under construction
- Over 30 million km travelled without catenary

CITADIS X05

KEY TECHNICAL FEATURES

Specification criteria	Values specific to each nominal length		
	20 nominal meter versions	30 nominal meter versions	40 nominal meter versions
	CITADIS 205	CITADIS 305	CITADIS 405
Vehicle length (depending on door width type)	24 m	32 m to 37 m	43 m to 45 m
Vehicle width	2.4 m	2.4 m and 2.65 m	
Track gauge	1435 mm		
Number of bogies per tram	2	3	4
Number of car modules per tram	3	5	7
Provision for subsequent tram extension	Up to 5 modules (37 m)	up to 7 modules / 4 bogies	extendable (case by case)
Low floor percentage	100%		
Access height (entrance)	intermediate doors: 325 mm, front doors: 334 mm (above top rail)		
Central aisle width over bogies	Up to 750 mm		
Number and type of doors per side (Sliding plug doors)	4 double doors	4 to 6 double doors or 2 to 4 double doors + 2 single doors	5 to 8 double doors or 3 to 6 double doors + 2 single doors
Seating configuration	modular arrangements (see diagram)		
Passenger capacity seated	41	42 to 66	57 to 82
(@ 4 pax /m ²) standing	101	152 to 184	215 to 237
TOTAL	142	202 to 238	271 to 341
comfort ratio ⁽¹⁾	29%	up to 28%	up to 25%
exchange ratio ⁽²⁾	26%	up to 27%	up to 25%
wheelchair areas	1	1 or 2	1 or 2
Passenger information equipment	different packages available		
HVAC (Heating, Ventilation, Air Conditioning)	independent controls for passenger & driver zones / scaled to relevant climatic conditions		
Motorization ratio	100%	67%	75%
Maximum speed in service	70 km/h	Up to 80 km/h	
Maximum acceleration	1.3 m/s ²		
Service deceleration	1.2 m/s ²		
Compression load	400 kN		
Crash absorption resistance	meets EN15227 standards		
Minimum horizontal curve radius	18 m in depot / 25 m on line		
Operation	bidirectional or unidirectional operation in single or double unit		
Traction motors	2 air-cooled permanent magnet motors per motorized bogie		
Power supply voltage	750 Vdc (600 Vdc as an option)		

(1) number of seats for passengers / total passenger capacity per tram

(2) sum of widths of doors / total length of passenger zone per tram



FOR MORE INFORMATION:

Alstom

48, rue Albert Dhalenne
93482 Saint-Ouen-sur-Seine
Cedex - France
Phone: +33 1 57 06 90 00

www.alstom.com