STADLER
We Track Clever Solutions

FLIRT electrical low-floor multiple unit

Second series for MÁV-START Zrt. (Hungarian national railway), Hungary

For suburban rail services on the lines around Budapest, MÁV-START Zrt. ordered a further series of 42 FLIRT EMUs. The FLIRT (**F**ast **L**ight **I**nnovative **R**egional **T**rain) has already proven successful in Hungarian suburban rail transport. This train is characterised by a high acceleration capability and a passenger compartment with through access from one end to the other, optimised for a platform height of 550 mm. Great importance has been attached to passenger comfort. Sliding step, wheelchair lift, air conditioning, toilets adapted to the needs of disabled persons, passenger information systems with TFT monitors, Wi-Fi, electric sockets for laptops and other chargers, and video surveillance are just some of the outstanding features of the FLIRT for MÁV-START Zrt.

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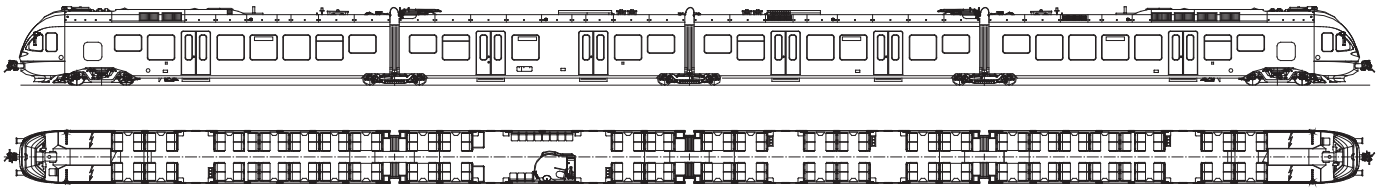

Technical features

- Bright, passenger-friendly interior with individual scope for design
- Full access through the entire passenger compartment, no steps
- Low-floor share > 90%
- Spacious multi-purpose zones in the entrance area
- 6 entrance doors on each side for a rapid exchange of passengers
- Air conditioning for passenger compartment and driver‘s cab
- WiFi from two providers for a high availability
- 230 V electric sockets for laptops and other chargers
- Vacuum toilet system with disabled access
- Video surveillance in accordance with the latest data protection directives
- Ergonomically designed driver‘s cab
- GRP front
- Autocoupler
- Vehicle body made of extruded aluminium sections
- Motor and trailer bogies with pneumatic suspension
- Redundant drive system consisting of 4 power trains with water-cooled IGBT power converters
- Vehicle control system with train bus and diagnostics computer (CANopen bus)
- Automatic train control devices: EVM, ETCS Level 1 and 2
- Automatic train control device PZB90 (inductive train control): Installation prepared (location, cabling)
- Multiple-unit control for up to 3 coupled vehicles

Vehicle data

Customer	MÁV-START Zrt., Hungary
Application	Suburban services on the lines around Budapest
Gauge	1435 mm
Designation	415 061-102
Supply voltage	25 kV AC, 50 Hz
Arrangement of wheelsets	Bo‘ 2‘2‘2‘ Bo‘
Number of vehicles	42
Commissioning	2014 / 2015
Seats	200
Tip up seats	11
Standing room (3 persons/m^2)	164
Floor level	
Low-floor at entrance door	600 mm
High-floor	1120 mm
Entrance width	1300 mm
Longitudinal force	1500 kN
Length over coupling	74 278 mm
Vehicle width	2880 mm
Vehicle height	4150 mm
Operating mass, unladen weight	approximately 123 t
Bogie wheelbase	
Motor bogie	2700 mm
Trailer bogie	2700 mm
Diameter of driving wheel, new	860 mm
Diameter of carrying wheel, new	750 mm
Continuous output at the wheel	2000 kW
Max. output at the wheel	2600 kW
Starting tractive effort (up to 47 km/h)	200 kN
Starting acceleration	1.2 m/s^2
Maximum speed	160 km/h