

S70 Low-Floor Light Rail Vehicle

Charlotte, North Carolina

Rail Systems



low-floor vehicle, ideal for street-level operation and built in the USA. Each six-axle S70 light rail vehicle is equipped with two power trucks (one under each end) and a non-powered center truck.

The interior of this S70 LRV has been designed to maximize passenger space, incorporating a predominately knee-to-back seating arrangement. Each S70 LRV is equipped with eight wide opening sliding

plug doors all located in the low-floor area, with four to each side of the vehicle. The door spacing has been optimized to allow for greater passenger flow entering and exiting the vehicle, which ultimately decreases the station dwell times.

In addition to the maximized passenger space and wide doorways the vehicle is also equipped with four designated wheelchair spaces allowing for priority

The state of North Carolina became the first south eastern state to start a modern-era light rail system. Charlotte Area Transit System, commonly referred to as CATS opened its first light rail line in the fall of 2007 to an overwhelming crowd of transit supporters with a base fleet of 16 Siemens vehicles running on 9.6 miles of track. Currently the LYNX Blue Line, with 20 vehicles, is the only light rail system in the United States that runs through a Convention Center. Introducing the latest edition of light rail vehicles for the Charlotte system; the 70% low-floor Siemens S70 light rail vehicle.

A steel carbody construction; fully bi-directional; double articulated; 70%

Performance and Capacity

Maximum operational speed	66 mph	106 km/h
Maximum allowable speed	71.5 mph	120 km/h
Service acceleration and deceleration	3.0 mphps	1.34 m/s ²
Emergency braking rate	4.9 mphps	2.2 m/s ²
Passenger capacity	68 seats	
	Approx. 230 total passengers @ 6 p/m ²	
	4 wheelchair spaces and 2 bicycle racks	
Maximum operational gradient	7%	
Motor power rating	174 hp x 4	130 kW x 4
Catenary supply voltage	750 Vdc	

seating to disabled passengers and doorway ramps to assist in the boarding and exiting of disabled passengers.

To accommodate Charlotte’s extensive bicycle population, this S70 incorporates four bicycle racks located adjacent to each doorway.

To maximize passenger comfort each vehicle is equipped with two roof-mounted HVAC units per LRV.

The S70 utilizes a passenger information system consisting of operator and automated announcements, passenger-

operator intercoms and interior and exterior electronic destination signs, as well as interior and exterior surveillance system for increased passenger safety.

The S70 LRV is electrically powered from an overhead wire system (catenary) and for Charlotte operates at speeds up to 66 mph, carrying close to 230 passengers in each vehicle with the ability to operate in multiple vehicle consists (up to four). The S70 removes automobiles off the road in turn helping cities decrease their CO₂ emissions.

In 2013 Americans took 10.7 billion trips on public transportation, which is the highest annual public transit ridership number in 57 years, according to a report released by America Public Transportation (APTA) in March 2014.

Vehicle Dimensions and Weight

Length over coupler	93.6 ft	28530 mm
Width	8.7 ft	2650 mm
Height with pantograph (locked down)	12.7 ft	3870 mm
Maximum pantograph height	up to 23 ft	7010 mm
Vehicle empty weight	99500 lbs (AW0)	45130 kg
High-floor section above TOR	2.2 ft (with 1 step plus slight ramp)	670 mm
Low-floor section above TOR	1.2 ft (threshold)	356 mm (threshold)
	1.3 ft (center)	396 mm (center)
Minimum turning radius	82 ft	25 m
Vertical curve, crest	820 ft	250 m
Vertical curve, sag	1150 ft	350 m
Track gauge	4.7 ft	1435 mm
Wheel base	6.2 ft (power trucks)	1900 mm (power trucks)
	5.9 ft (center truck)	1800 mm (center truck)



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