

# SIEMENS

## ACS-64 Amtrak Cities Sprinter Electric Locomotive

Northeast and Keystone Corridors

Mobility



In October 2010, Amtrak - the National Passenger Railroad Corporation of the United States, ordered 70 new high-speed electric passenger locomotives from Siemens to complement Amtrak's passenger service on the Northeast Corridor (NEC) between Boston, Mass. and Washington D.C. and the Keystone Corridor between Philadelphia and Pittsburgh, Pa.

The Amtrak Cities Sprinter locomotive (ACS-64) is designed to fully comply with all U.S. federal standards and regulations. The monocoque carbody structure on this locomotive is reinforced to fulfill the specified 800,000 lbs buff strength while offering full-width anti-climbers engagement and push-back couplers that

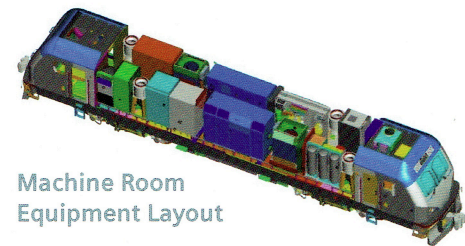
are part of the locomotive's integrated Crash Energy Management System, offering enhanced safety to its occupants.

The ACS-64 electric locomotive is a wide-body, double-cab design, suited for push/pull operation without turning and is equipped with a FastBrake New York Air Brake System and electronically controlled pneumatic brake system.

The electrical traction system is based on technologically advanced Siemens' designs utilizing service proven and reliable components. This latest version of Siemens' locomotives technology used in the ACS-64 electric locomotive offers significant advantages to the customer, such as increased performance and efficiency, higher recuperative braking power, enhanced operability with a high

level of component redundancy, and faster maintenance ability for optimum service availability.

The machine room layout is based on the Siemens European Vectron locomotive providing the benefit of a clean and spacious design, successfully proven under various operating conditions in applications worldwide.



Machine Room  
Equipment Layout

### Performance and Capacity

Maximum speed	125 mph
Catenary voltage and frequency	25 kV 60 Hz / 12.5 kV 60 Hz 12 kV 25 Hz
Rated power	6400 kW maximum / 5000 kW continuous
Head end power	1000 kVA
Tractive effort (max.)	72 klbs

To further enhance reliability, all wiring, cabling and piping is routed under the middle aisle walkway within the locomotive carbody machine room for easy access and protected from external elements.

To keep up with Amtrak's Acela high-speed trains on the NEC, the ACS-64 electric locomotive has excellent acceleration capabilities and reaches a maximum speed of 125 mph with 18 Amfleet coaches while at the same time providing up to 1 MVA of head-end power for train auxiliary equipment.

The ACS-64 electric locomotives are equipped with regenerative braking, that allows energy to be fed into the power system for use by other trains. When fully deployed and operated as designed, the regenerative braking feature may result in the generation of 3 billion kilowatt hours of energy over its lifespan.

Traction and locomotive control is performed by the proven SIBAS® 32 control system. The core of the control system is the multi-vehicle-bus, interfacing with locomotive subsystem control computers, all the I/O stations as well as the man-machine-interfaces, such as controls and displays on the engineer's console. New on this locomotive, is the installation of the Advanced Civil Speed Enforcement System control unit, including train radio, automatic train control and positive train control.

The engineers cab and amenities have been ergonomically designed to meet the expectations of Amtrak's Brotherhood of Engineers Cab Committee.

The locomotive truck has a center pin, traction pivot design, offering a low connection to the carbody. The truck frame is an integral welded structure.

The locomotive propulsion unit consists of a pinion hollow shaft drive with traction motors that are fully suspended and gearboxes partially suspended for improved stability and ride quality. The primary and secondary suspension springs utilize the flexicoil system, a well-proven design used on hundreds of Siemens trucks worldwide. A triangular tie rod assures stable wheel set guidance. Use of pivot elements and lateral mounting of secondary suspension springs significantly reduces the rotation stiffness of the truck, resulting in considerable reduction of wheel and rail wear.

### Further Information:

#siemenslocomotive  
#amtrak

### Vehicle Dimensions and Weight

Weight	217000 lbs	98000 kg
Length	67 ft	20320 mm
Width (incl. handrails)	10 ft	2984 mm
Height (without pantograph)	12.5 ft	3810 mm
Distance between truck centers	32.5 ft	9900 mm
Wheel diameter (new)	44 in	1117 mm
Wheel arrangement	Bo'Bo'	
Minimum curve radius	250 ft	76 m



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