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ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT), ILLINOIS

Charger Diesel-Electric Locomotive

Connecting midwestern states: Illinois, Michigan, Missouri, Indiana, and Wisconsin, the Siemens Mobility environmentally friendly Charger diesel-electric locomotives help usher in the next generation of clean, reliable and efficient intercity rail travel in the Midwest. With a fleet of 33 Chargers, these locomotives are traveling on state-supported routes across the Midwest.

The Charger diesel-electric locomotive is designed to fully comply with all U.S. federal standards and regulations, and in addition is 100% Buy America and FRA compliant. The monocoque carbody structure on this locomotive is reinforced to fulfill the specified 800,000 lbs. buff strength while offering full-width anti-climber-engagement and push-back couplers that are part of the locomotive’s integrated crash energy management system (CEM), providing enhanced safety to its occupants.

The wide-body, single-cab design, is suited for push/pull operation. The Charger diesel-electric locomotive is equipped with a proven propulsion system with a fuel-efficient Cummins 16-cylinder diesel engine providing up to 4,400 hp. The engine feeds an alternator and the IGBT traction converters provide single axle control for 125 mph operation while meeting Environmental Protection Agency (EPA) Tier 4 emissions standards.

This latest version of the Siemens Mobility locomotive technology used in the Charger offers significant advantages to the customer, such as increased

Performance and Capacity

Maximum speed	125 mph
Rated power	maximum 4,400 hp @ 1,800 rpm at AAR standard conditions
Operating range	600 to 1,800 rpm
Head end power	600 kW
Tractive effort (max.)	65,000 lbs / 290 kN
Fuel tank volume	1,800 gal
DEF tank volume	260 gal

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performance and efficiency, high recuperative braking power, enhanced operability with a high level of component redundancy, and faster maintenance 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.

To further enhance reliability and improve maintenance piping is routed under the center and side aisle walkways within the locomotive machine room for easy access and protection from external elements.

The Charger locomotives are equipped with a microprocessor controlled pneumatic brake system. The dynamic braking allows the energy of the traction motors to feed the Auxiliary & HEP System in order to minimize fuel consumption.

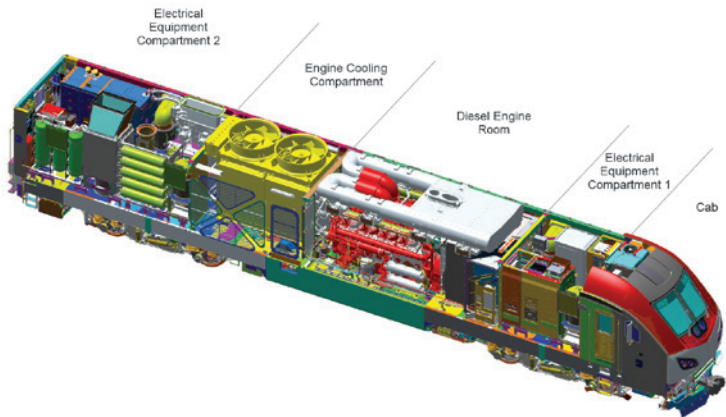
Traction and locomotive control are performed by the proven SIBAS® 32 control system. The core of the control system is the multi-function vehicle bus, interfacing with locomotive subsystem control computers, all the I/O stations as well as the man-machine interfaces, such as controls and displays on the engineer's console. This locomotive has cab signaling, positive train control and train radio.



The locomotive truck is designed based on previous experience with Amtrak's ACS-64 locomotive. The center pin and traction pivot design offers a low connection to the carbody, and 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 Mobility trucks worldwide. A triangular tie rod assures stable wheelset 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.



Vehicle Dimensions and Weight

Weight	267,000 lbs	121109 kg
Length	71.5 ft	21793 mm
Width (including handrails)	10 ft	3048 mm
Height	14.7 ft	4480 mm
Distance between truck centers	40.8 ft	12440 mm
Wheel diameter (new/worn)	44 in / down to 41 in	1117 mm / down to 1041 mm
Wheel arrangement	Bo'Bo'	
Minimum curve radius	250 ft	76 m



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