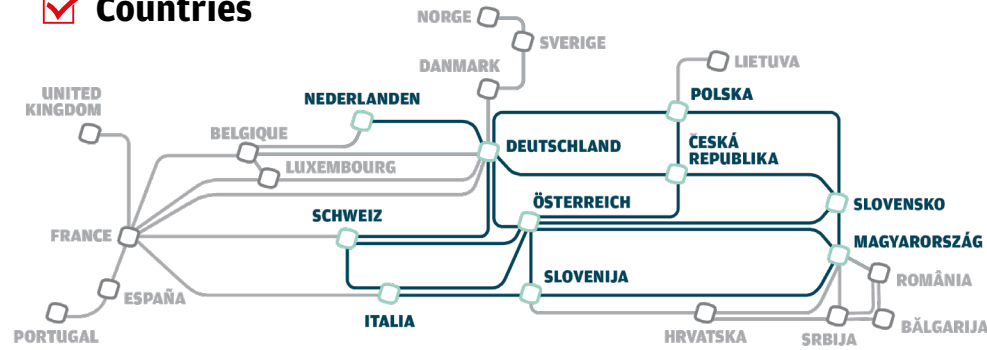


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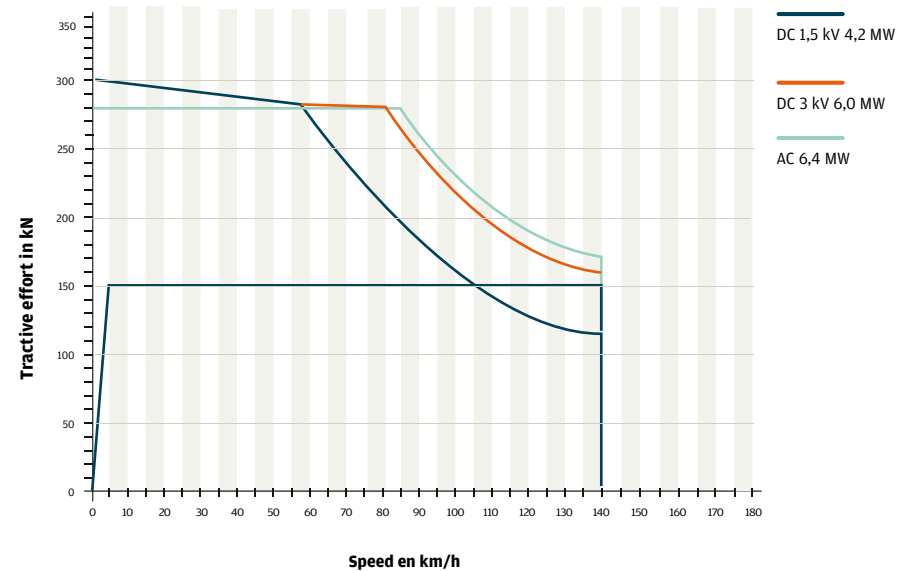
✓ Countries



✓ Main technical data

Manufacturer	Siemens
Continuous rated power	6,400 kW
Maximum speed	140 km/h
Starting tractive effort	300 kN
Continuous tractive effort	270 kN
Weight in working order	87 t
Wheel arrangement	Bo'Bo'
Clearance gauge	UIC 505-1
Length	19.580 m
Traction motors	4 motors
Electric braking	150 kN
Multiple unit operation	Yes

✓ Tractive effort-speed curve



Name	ES64F4 variant VD	ES64F4 variant VE/VL	ES64F4 variant VM	ES64F4 variant VH	ES64F4 variant VO
Homologations	D-A-I-SI	D-A-CH-I-NL-SI	D-A-PL-CZ-SK-HU-SI	D-A-PL	D-A-PL-NL
Year of construction	2009	2009-2010	2010-2011	2009	2006-2009
Electric power supply	15 kV 25kV 1,5kV 3kV	15 kV 25kV 1,5kV 3kV	15 kV 25kV 1,5kV 3kV	15kV 25kV 1,5kV 3 kV	15kV 25kV 1,5kV 3kV
Safety systems	ETCS L2/L1, STM LZB/PZB and STM SCMT)	ETCS L2/L1, STM LZB/PZB, STM SCMT, ZUB, INTEGRA and STM ATB	LZB/PZB, Mirel and SHP	LZB/PZB, SHP	ETCS L2/L1, STM PZB/LZB, STM ATB
Other equipment	Energy meter	Energy meter	Energy meter	Energy meter	Energy meter