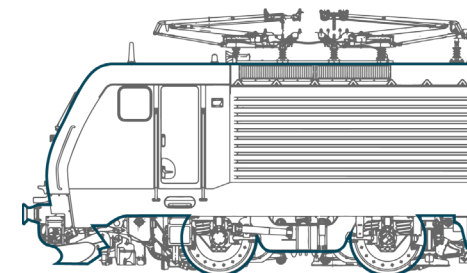
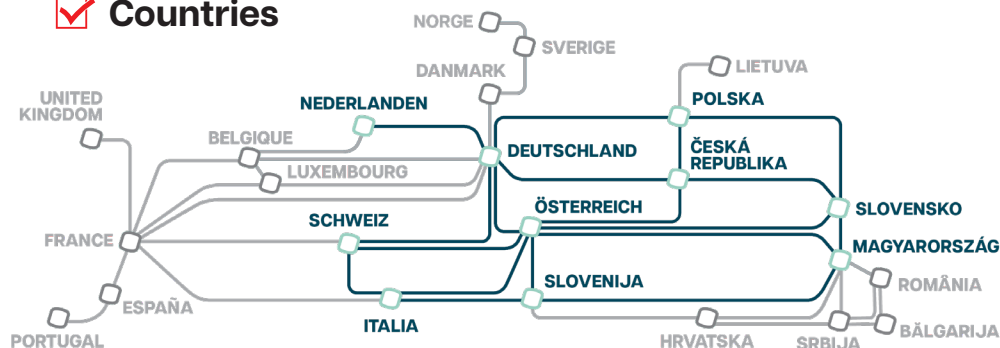


# BR 189 ES64F4

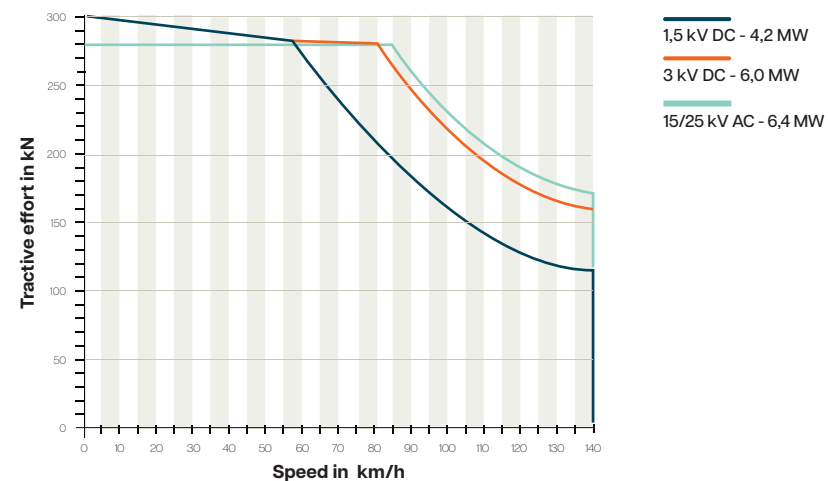
## ✓ Countries



## ✓ Main technical data

<b>Manufacturer</b>	Siemens
<b>Continuous rated power</b>	6,400 kW (15/25 kV AC)
<b>Maximum speed</b>	140 km/h
<b>Starting tractive effort</b>	300 kN
<b>Continuous tractive effort</b>	270 kN
<b>Weight in working order</b>	87 t
<b>Wheel arrangement</b>	Bo'Bo'
<b>Clearance gauge</b>	UIC 505-1
<b>Length</b>	19,580 m
<b>Traction motors</b>	4 motors
<b>Electric braking</b>	150 kN
<b>Multiple unit operation</b>	Yes

## ✓ Tractive effort-speed curve



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