

EV FACT SHEET

Tesla Model S



Image: Tesla

INTRODUCTION

The Tesla Model S is a luxury all-electric, five-door 'liftback' passenger car built by Tesla Inc. It is currently built only in the USA, with US sales beginning in June 2012. Australian sales began in December 2014.

Since its introduction, the Model S has continued to win innumerable awards for its innovative design, extremely high level of safety, sleek looks and luxury features. In September 2018, global sales of the Model S passed 250,000.

At almost 5 metres long, it fits into the Australian 'large car' segment. With prices starting over AU\$100,000, it is considered a luxury car competing against the likes of BMW, Mercedes and Jaguar.

Tesla have introduced many innovative ideas to the sales model of its cars. These include continual updating of the features in existing cars via 'over-the-air' updates, a direct sales model, and potentially soon to come – online only sales via the Tesla website.

Tesla also include as an option a high level of semi-autonomous driving capacity called 'Autopilot'. Tesla predict that their vehicles will be able to operate 'fully autonomously' within a few years through the addition of over-the-air software improvements in all 'Autopilot 2.0' equipped Tesla vehicles. (Note: road regulations are well behind this development – so it will be a long time before it is legal to drive 'hands-off' on Australian roads).

Having been on-sale in Australia since 2014, there are also a number of options for second-hand purchases as well as new purchasing.

As of late April 2019, Tesla again offer three versions of the Model S, these being: 'Standard Range', 'Long Range' and 'Performance'. All three coming with slightly increased driving ranges over previous versions.

DRIVING RANGE

Under the old NEDC test cycle still used in Australia - the Model S has a test cycle range of 650 km for the 'Performance', 660 km for the 'Long Range' and 490 km for the Standard Range' according to the Australian Tesla website. (https://www.tesla.com/en_AU/).

Real world driving ranges however are generally found to be less than NEDC test cycle figures. For instance, the Long Range version typically has a real-world range in the order of 540 km.

As an example, the Model S Long Range would, at its limit, make a round-trip from the Melbourne CBD to Bairnsdale and back – provided neither the heating or air conditioning were used. For this sort of trip, a 30 min to 1hr top-up AC charge over lunch in Bairnsdale, or a 5 – 10 min DC fast charge along the way at the soon-to-open Traralgon Tesla supercharger site would be recommended.



Example maximum best-case return trip range. Image: Google maps

CHARGING SPEEDS/REQUIREMENTS

Charging port

The Model S is fitted with a modified Type 2 socket that does (depending on EVSE to vehicle communications) single phase AC charging, three phase AC charging or DC fast-charging.



Pic: Tesla modified Type 2 socket (note notch at top to prevent use of Tesla Superchargers with normal Type 2 sockets). Source: Wikipedia

CHARGING SPEEDS/REQUIREMENTS (CONTINUED)

AC charging:

The current Model S can charge at a maximum rate of 7.7 kW using single phase AC, or 11kW¹ for the standard charger using 3 phase AC.

Charging speeds vary on the capacity of the EVSE (Electric Vehicle Supply Equipment) it is connected to. Charging times are shown in table 1 below².

AC EVSE type:			DC EVSE type:		
15 A socket	16 A 1 phase (3.6 kW)	30 A 1 phase (7 kW)	16 A 3 phase (11 kW)	CHAdemo (50kW)	Tesla Supercharger (120kW)
42hr	28hr	14.25hr	9hr	>2hr (to 80%)	>1hr (to 80%)

Table 1: Charging times for the Model S 100kWh battery

Notes re AC charging for the Model S:

1. Earlier versions of the Model S with an optional second charger could charge at up to 22 kW AC. With the update model in 2016 (recognisable by the smaller nose trim), the maximum with the optional higher rate charger was 16.5 kW. However, Tesla no longer offer any option for higher rate AC charging above the highest standard three phase rate of 11kW.
2. Given the flexibility of the Tesla Wall Connector EVSE and the variety of charging rate options it can be set to (starting from 1.4kW), not all possible charging rates are shown.

DC fast charging:

The current Model S can DC fast-charge at up to 120kW at any Tesla supercharger, or with the use of a special adaptor, at CHAdemo DC fast-chargers. (In Australia, these are currently only available at a 50kW maximum charge rate).

Notes re DC charging for the Model S:

- a) The coming Tesla Model 3 being shipped now to Europe (and soon to Australia) is fitted with the common standard CCS2 socket instead of the Tesla modified Type 2 socket. It is also rumoured that the Tesla models S and X will make the change to CCS2 in the not-too-distant future.
- b) The change to CCS2 by the Model 3 means that an adaptor from Tesla modified Type 2 to CCS2 is soon to come.
- c) Given there is already a Tesla adaptor available for CHAdemo fast chargers, with the addition of a CCS2 to modified Type 2 adaptor, Teslas will be able to charge at ANY DC fast-charger!

Note:

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HOME CHARGING CONSIDERATIONS

General

To get the shortest home charging time for a new Model S, an 11kW, 3 phase AC EVSE would be needed. However, depending on your existing power supply and/or charging needs, it may only be practicable to fit a lower rated EVSE. (See notes below). Lower capacity EVSEs will increase charging times, as shown in table 1.

Important notes for any home EVSE installation:

1. High charging rates are generally not needed for overnight charging.
2. Homes do not normally have three phase AC connected.
3. Switchboard and/or electrical supply upgrades may be needed if your home is more than 20 years old. (See fact-sheet on 'Making your home EV ready', or read articles in:
 - (a) EV News, (AEVA newsletter) issue 231, or
 - (b) ReNew edition 143. (The magazine published by Renew)

SPECIFICATIONS

Boot volumes in litres (1 litre = 10 x 10 x 10 cm)

- Front boot: 150 L
- Rear boot: 745 L
- Rear seat folded: 1,645 L

Dimensions:

- Overall length: 4,979 mm
- Overall width (mirrors folded/mirrors out): 1,964/2,187 mm
- Overall height: 1,445 mm

Battery:

- 100kWh

Energy consumption: (<https://greenvehicleguide.gov.au>)

- Standard, Long range: 189 Wh/km
- Performance: 200 Wh/km

Kerb weight:

- 2,200 kg (depending on options selected)

WHERE TO BUY

The Tesla range is available from the five Tesla stores in Australia (two in Melbourne, two in Sydney and one in Brisbane), or via online orders anywhere in Australia. For store locations, see:

https://www.tesla.com/en_AU/findus/list/stores/Australia