



12 amp electric car charge rate

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Dave VanderWerp has spent more than 20 years in the automotive industry, in varied roles from engineering to product consulting, and now leading Car and Driver's vehicle-testing efforts. Dave got his very lucky start at C/D by happening to submit an unsolicited resume at just the right time to land a part-time road warrior job when he was a student at the University of Michigan, where he immediately became enthralled with the world of automotive journalism.

One of the hindrances to electric vehicle adoption is the rate at which EVSE's are being installed around the country. Charging stations aren't always where we need them to be, and some cities are seeing a low rate of EVSE installation. This creates a condition in which it's extremely desirable to work out a method for using normal 120 volt outlets to charge electric cars. This way electric vehicle owners can still charge their cars, even if their local EVSE network is insufficient.

Every electric car comes with a portable EVSE meant to plug into 120 volt outlets. These adapters support a modest charge rate of at most 12 amps, sometimes less. The 12 amp rate corresponds to a 1.4 kilowatt charge rate, which in turn is why charging at 120 volts could take as much as 20 hours for a full recharge. Still, if this is your only choice to charge your car it's what you'll do.

Some electric car owners with short commutes find they can get along without a level 2 EVSE at home, and simply rely on the 120 volt EVSE and a normal power outlet in their garage.

Some of the level 1 120 volt EVSE's can be upgraded (primarily, the one which comes with the Nissan Leaf) to support either 120 volts or 240 volts, and bump the maximum amperage to 16 amps. The 240 volts 16 amps, charge rate is the same as the level 2 EVSE's meaning that one can feasibly skip buying a normal EVSE, get the 120 volt EVSE upgraded to 240 volts, and enjoy the same charge rate. The upgrade service is offered through EVSEupgrade . The warranty on your car remains intact, but the upgrade does, of course, void the warranty on the 120 volt EVSE.

Another option is that some of the level 2 EVSE's are small enough to carry with you, and can be plugged into regular 240 volt outlets. For example the Leviton EVB22-3PM has a NEMA 6-20P plug supporting 16 amp charge rates, and is luggably small enough to carry around.

The non-upgraded 120 volt EVSE's should work well on pretty much any 120 volt electrical outlet, because the 12 amps or less charge rate is much less than the typical 15 amp circuit breaker. But what if the circuit you plug into has old or thin wires? What if the outlet itself is old and corroded? What if there are other devices, like a refrigerator, on the same circuit? The safest result is if the circuit breaker trips, but thin wiring carrying high current might heat, which could have disastrous results.

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Likewise you may have an old extension cord lying around, but is that cord rated to handle the current to charge your car? It's best to look for the heaviest duty extension cord you can find, preferably one using 10 gauge wires.

With care one can use the right adapters to enable full power electric car charging even if no level 2 EVSE is available. But as we've seen, one must do this carefully. ALWAYS make sure you plug your electric car into an outlet you know is rated to handle the high current of charging. Where possible, use a real properly installed level 2 EVSE, because it'll be safer and more straight-forward.

Everywhere the word "ubiquitous" appears the author shows that he has no idea what the word means or how to use it properly in a sentence. Where is the editor here?

When I was working on the travel charger program for GM it was well known that there is no extension chord allowed in the U.S.A. electrical code for 240V; one end always has to be hard wired or the appliance (car in this case) has to be directly connected to a hard-wired wall plug; thus no intermediate connections as in extension chord.

Interesting. However, a cord itself isn't voltage-specific, only the configuration of the plugs on the end is. Ask anyone who has a 240V welder they've needed to use with an extension cord. Any cord will do, so long as it's thick enough to carry the watts. You just need an adapter to be able to plug the normal 3-prong 120V 15A plug into the 240V outlet (and another to put the 240V plug of the welder into the other end) and you're all set.

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