

Power Sharing – In Depth

How to run multiple chargers on a single feeder and breaker.

ZEF Energy chargers employ an automatic load management system that will allow for up to 4 chargers to run off a single feeder and single breaker. This is allowable according to both the 2017 and 2020 NEC, in section 625.42. (See below for specific code language)

Up to 4 chargers can be run off a single circuit, and this is specified in the commissioning of the units in the password protected software platform, ZEFNET (utility.zefenergy.com). When specifying a breaker at a specific location during the commissioning process within the ZEFNET software, if the second charger is being commissioned on a circuit, a selection box allowing for a pre-existing breaker to be selected means the automatic load management system will recognize the each successive charger will be associated with the circuit breaker selected.

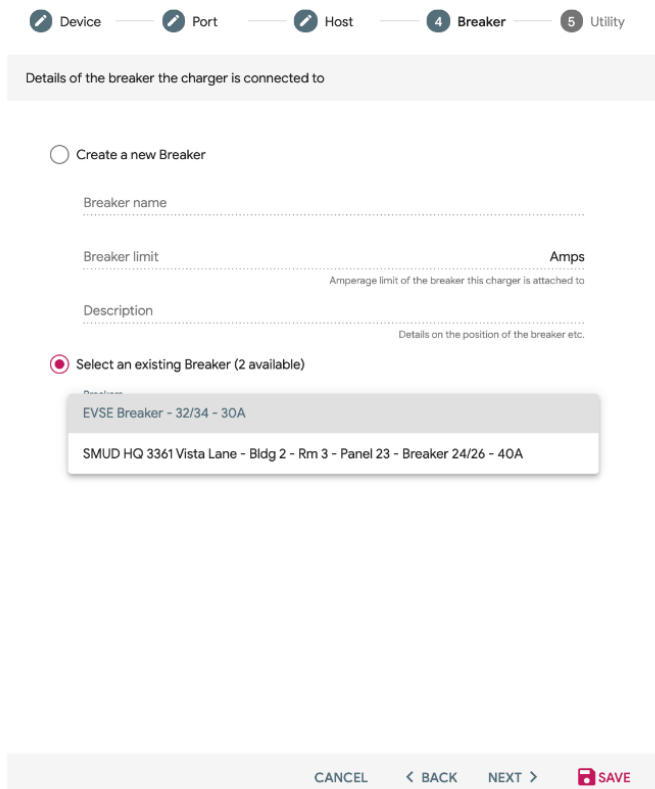
The management system will dispatch the appropriate commands to ensure the chargers stay within the tolerances of the specified breaker rating, as entered into the commissioning software in the online ZEFNET portal.

Breaker setup example:

When walking through the onboarding process of each charger, there is a section called Breaker. This section allows you to establish either a new breaker to associate the charger with, or to associate the charger with a pre-existing breaker:

By selecting a pre-existing breaker, any charger that is associated with the selected breaker automatically enters into control by automatic load management system.

Any additional chargers who have the same breaker selected on commissioning will also enter into control by the automatic load management system.



The screenshot shows a multi-step commissioning process. At the top, a progress bar indicates the current step is '4 Breaker', with previous steps 'Device', 'Port', and 'Host' completed, and '5 Utility' remaining. Below the progress bar, the section is titled 'Details of the breaker the charger is connected to'. There are two main options: 'Create a new Breaker' (unselected) and 'Select an existing Breaker (2 available)' (selected). Under 'Create a new Breaker', there are input fields for 'Breaker name', 'Breaker limit' (with a unit of 'Amps' and a note 'Amperage limit of the breaker this charger is attached to'), and 'Description' (with a note 'Details on the position of the breaker etc.'). Under 'Select an existing Breaker', a dropdown menu is open, showing two options: 'EVSE Breaker - 32/34 - 30A' and 'SMUD HQ 3361 Vista Lane - Bldg 2 - Rm 3 - Panel 23 - Breaker 24/26 - 40A'. At the bottom of the form, there are navigation buttons: 'CANCEL', '< BACK', 'NEXT >', and a red 'SAVE' button with a save icon.

National Electrical Code (NEC) Language

2017 Code Language:

625.42 Rating. The equipment shall have sufficient rating to supply the load served. Electric vehicle charging loads shall be considered to be continuous loads for the purposes of this article. Where an automatic load management system is used, the maximum equipment load on a service and feeder shall be the maximum load permitted by the automatic load management system.

2020 Code Language:

625.42 Rating. The power transfer equipment shall have sufficient rating to supply the load served. Electric vehicle charging loads shall be considered to be continuous loads for the purposes of this article. Service and feeder shall be sized in accordance with the product ratings. Where an automatic load management system is used, the maximum equipment load on a service and feeder shall be the maximum load permitted by the automatic load management system.

Adjustable settings shall be permitted on fixed-in-place equipment only. If adjustments have an impact on the rating label, those changes shall be in accordance with manufacturer's instructions, and the adjusted rating shall appear with sufficient durability to withstand the environment involved on the rating label. Electric vehicle supply equipment with restricted access to an ampere adjusting means shall be permitted to have ampere ratings that are equal to the adjusted current setting. Sizing the service and feeder to match the adjusting means shall be permitted. Restricted access shall prevent the user from gaining access to the adjusting means. Restricted access shall be accomplished by at least one of the following:

- (1) A cover or door that requires the use of a tool to open*
- (2) Locked doors accessible only to qualified personnel*
- (3) Password protected commissioning software accessible only to qualified personnel*