Suspend Charging mode

Installation guide
Addendum

Eve Single S-line
Eve Single Pro-line
Eve Double Pro-line

ALFEN
POWER TO ADAPT

EVE SINGLE S-LINE
with charging cable

EVE SINGLE S-LINE
with socket

EVE SINGLE PRO-LINE
with charging cable

EVE SINGLE PRO-LINE
with socket

EVE DOUBLE PRO-LINE

ENGLISH

Background information on the Suspend Charging mode

Section 14a of the Energiewirtschaftsgesetz (German energy law) specifies the possibility for consumers to use electricity at reduced standing charges if it complies with certain conditions. The option only applies to customers who have a controllable device containing an independent measuring module (for instance an EV charging station) connected to their domestic energy connection.

The grid operator's energy meter is equipped with a potential free contact. By connecting the customer's device to the grid operator's energy meter via data cables, the grid operator can send a signal to the charging station to temporarily abort the energy demand to avoid an overload of the grid. During the shut-off time the customer will not be able to charge, but will still be able to use other household equipment. Temporarily disabling the possibility to charge is called the Suspend Charging mode.

This document describes the installation and configuration of the Suspend Charging mode functionality.

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1.1 Purpose and intended audience

Make use of this addendum to the installation manual to properly install and commission the charging station.

Installation, commissioning and maintenance of this installation may only be performed by a qualified electrician (Alfen-ICU certified partner). It is essential that the qualified technician has:

- Expertise on all relevant general and specific rules regarding safety and incident prevention
- Comprehensive knowledge of applicable electrical regulations.
- The ability to identify risks and avoid potential hazards.
- Received and read these installation and operation instructions.

1.2 General safety

DANGER!

These safety instructions are important to ensure safe operation. Failure to comply with them in accordance with general electrical safety regulations could result in a risk of electrical shock, fire and/or life threatening injury.

Using this product is expressly prohibited in the following situations:

- In the vicinity of explosive or highly flammable substances.
- If the product is located in or close to water.
- If the product or its individual components are damaged.
- Usage by children or individuals not able to properly assess the risks associated with using this product.

Alfen ICU B.V. shall not be liable in any way, for any kind of damage, and all warranties on both the product and accessories shall become void where:

- There has been a failure to comply with the instructions in this manual.
- Improper use.
- Installation and commissioning has been undertaken by unqualified persons.
- The product or accessories have been expanded or modified without our knowledge.
- Replacement parts have been used that are not approved or manufactured by Alfen.
- The ambient temperature is below -25 °C or above 40 °C.
- Situations have occurred that are beyond our control.

More extensive safety information is available in the relevant sections of this document.

1.3 Copyright

1.4 Registered Trademarks

Eve ® is a registered trademarks of Alfen B.V. Therefore unauthorized use of the trademark Eve or Eve Double Pro Line® or Eve Double P.G. Line is illegal.
All other designations in this document can be trademarks whose use by third parties for their own purposes can infringe the rights of the owner.

1.5 Disclaimer of Liability

This document has been subjected to rigorous technical review before being published. It is revised at regular intervals, and any modifications and amendments are included in the subsequent issues. The content of this document has been compiled for information purposes only.

Although Alfen ICU B.V. and Alfen B.V. have made best efforts to keep the document as precise and up-to-date as possible, Alfen ICU B.V. and Alfen B.V. shall not assume any liability for defects and damage which result through use of the information contained herein.

All obligations of Alfen ICU B.V. and Alfen B.V. are stated in the relevant contractual agreements. Alfen ICU B.V. and Alfen B.V. reserve the right to revise this document from time to time.

1.6 Addendum to the manual and installation guide

This installation guide is an addendum to the Alfen Eve single (S-line, Pro-line) and Eve double user manuals and installation guides. Refer to the specific sections in the User manuals for relevant safety information.

2. FUNCTIONALITY

2.1 Functionality

Alfen has developed a solution to suspend a running charging session on request of the grid operator. Suspending the charging session is done in a controlled way, according to the Mode 3 protocol.
The grid operators energy meter is equipped with a potential free contact. The grid operator controls the energy meter and can either open or close the contact (S1). When the contact is closed, the charging station can charge at full power. When the contact is open, the charging power is reduced to 0W.

The charging station makes sure a running transaction is suspended according to the Mode 3 protocol. The screen on the charging station will show a message for the user: 'Charging session halted by energy supplier'. In case the charging station is not equipped with a screen, the blue led will blink to indicate the power supply is halted by the energy supplier. During the shut-off time it is possible to start a new charging session; the session, however, will be paused immediately. As soon as the potential free contact (S1) closes again, the charging station will continue the suspended charging session.

NOTICE!

This functionality is developed for all Eve (Single and Double) charging stations and available from software version 3.4.2 and higher.

DANGER!

In this document the contact is considered to be closed when charging is allowed. In practice it is possible that the contact is open when charging is allowed. The installer is responsible to assess the situation and act accordingly.

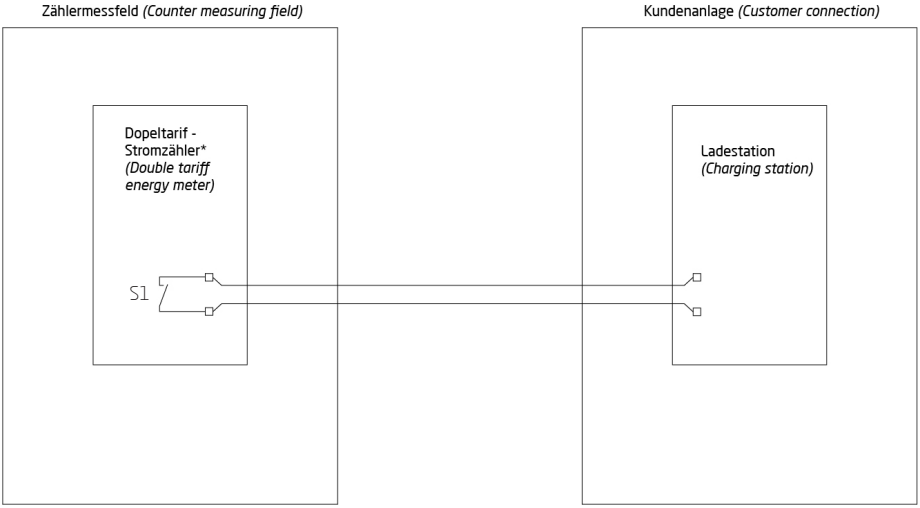

Image 1: Overview of the energy meter and charging station

3.1 Hardware setup

An RJ11 (or RJ12) data cable is used to send the S1 contact signals to the charging station. The data cables of the potential free contact should be connected to the RJ11/RJ12 connector on the controller board of the charging station.

EVE SINGLE S-LINE

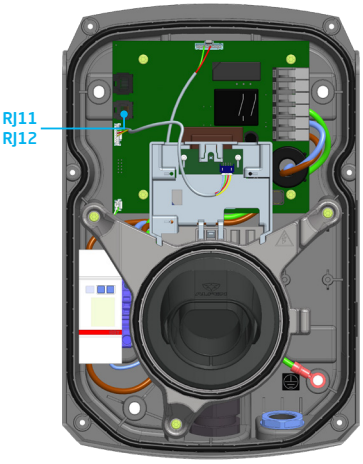

Image 2: Location RJ11/RJ12 connector CTL910 controller board

EVE SINGLE PRO-LINE

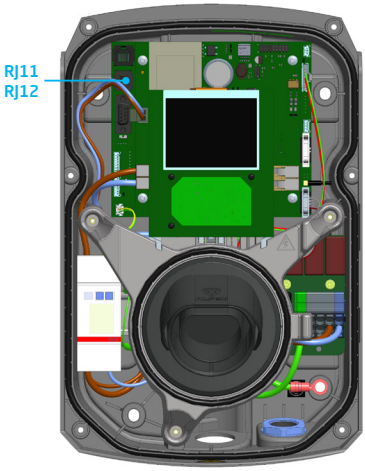

Image 4: Location RJ11/RJ12 connector CTL910 controller board

EVE DOUBLE PRO-LINE

Image 3: Location RJ11/RJ12 connector on CTL920 controller board

NOTICE!

Refer to the user manual and quick installation guide on how to remove and install the front cover of the charging station.

DANGER!

Refer to the specific sections in the user manual and quick installation guide manuals for relevant safety information.

4. INSTALLATION

4.1 Requirements

Connecting the potential free contact with the charging station controller board should be done under the following strict conditions:

1. No other connection is allowed. The two signal cables can only be connected to a potential free contact.

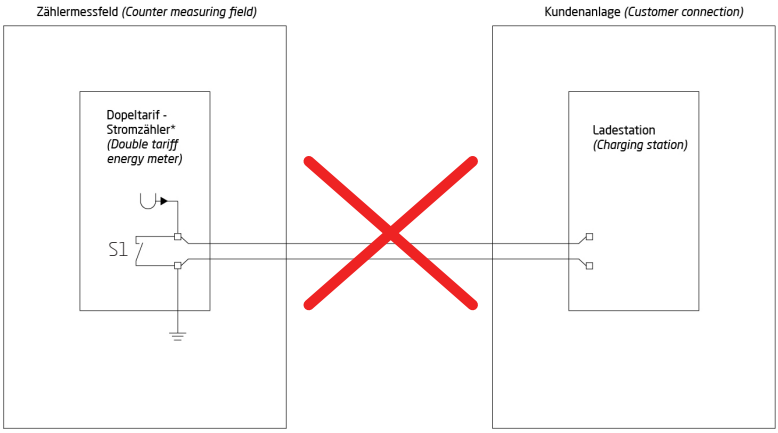

Image 5: Overview of the energy meter and charging station

2. The charging station should be the only device connected to the potential free contact

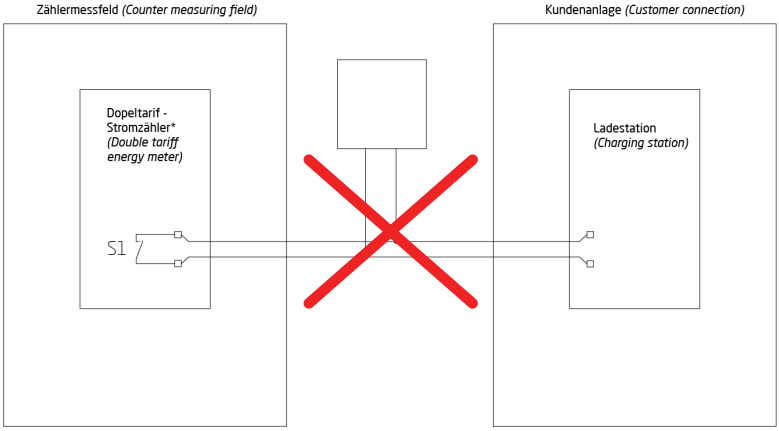

Image 6: Overview of the energy meter and charging station

3. Never offer an external voltage on the contacts of the RJ11 connector.

4.2 Installation and configuration procedure

NOTICE!

Before installing the system read the requirements as described in the paragraph 'Requirements'.

1. Verify the type of contact in the energy meter of the grid operator (NO or NC contact).
2. Adjust the charging station configuration to Suspend Charging mode before continuing the installation. Check the configuration chapter how to configure the charging station.

NOTICE!

Selecting the right setting should be done according to the configuration of the contact in the energy meter of the grid operator.

Station response	Normally Closed (NC) contact	Normally Open (NO) contact
Allow charging	Suspend when closed	Suspend when opened
Suspend charging	Suspend when closed	Suspend when opened

3. Depending on the chosen configuration setting, follow the test procedure as shown below:

Station response	Test procedure
Suspend when closed	Test procedure A Step 1: Short circuit pin 2 and 4 (RJ11) or pin 3 and 5 (RJ12). Start a charging session. When the configuration is set right, the charging station will respond by (depending on the type of charging station): • Showing the message 'Charging session halted by energy supplier' on the screen • Blinking the blue led when starting the charging process Step 2: Undo the short circuiting and start a charging session. Charging is possible.
Suspend when opened	Test procedure B Step 1: Short circuit pin 2 and 4 (RJ11) or pin 3 and 5 (RJ12). Start a charging session. Charging is possible. Step 2: Undo the short circuiting and start a charging session. When the configuration is set right, the charging station will respond by (depending on the type of charging station): • Showing the message 'Charging session halted by energy supplier' on the screen • Blinking the blue led when starting the charging process

4. When the test is done successfully, the data cables can be attached to the potential free contact of the energy meter.
   RJ11 connector: Use signal cable 2 and 4 to connect with the energy meter of the grid operator.
   RJ12 connector: Use signal cable 3 and 5 to connect with the energy meter of the grid operator.

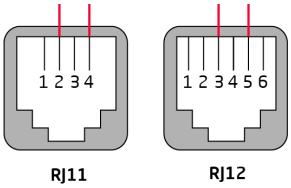

Image 7: RJ11 and RJ 12 connector

5. Start a charging session and check whether the behaviour of the charging station is as expected.

5. CONFIGURATION

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5.1 Configuration

Configuration of the Suspend Charging mode can be done via the back office (e.g. ICU Connect) or via the Service Installer application.

To configure the station for Suspend Charging Mode, the following configuration key is available:

Configuration key	Meaning	Values
Direct external suspend signal	Configure for which purpose the RJ11/RJ12 port is used.	DSMR P1 Suspend when closed Suspend when open

The name of the configuration key to set the Suspend Charging mode differs per software version:

Configuration key	Firmware version
Direct external signal	4.2.0 and higher
RJ11- Mode	3.4.1-3.4.3
(Not available)	3.4.0 and earlier

NOTICE!

The Suspend Charging mode cannot be activated in combination with the Active Load Balancing functionality via P1 (Smart Meter). When the Active Load Balancing functionality via P1 is enabled and the setting for Suspend Charging mode is activated, then this will be reverted to 'DSMR P1' when the charging station reboots. Therefore make sure P1 load balancing is disabled before enabling the Suspend Charging mode. This can be done by deactivating the Active Load Balancing functionality in the Service Installer app (not possible via the back office).

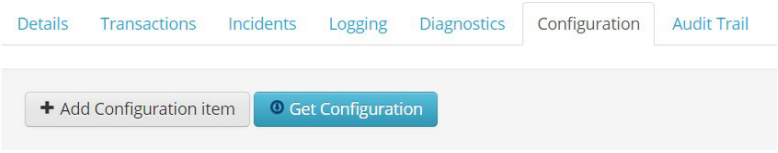

Image 8: ICU Connect Configuration tab

5.2 Enabling Suspend Charging mode using a central management system

In this paragraph the steps to configure Suspend Charging Mode are described using Alfen ICU Connect as an example. The configuration parameters are also made available in third party central management systems. In case a third party central management system is used to connect to the stations, please refer to the third party's description about changing configurations.

1. Open ICU Connect and navigate to the charging stations of interest
2. Go to tab *Configuration*
3. Press on *Get Configuration*
4. Go to item 'Direct external suspend signal/RJ11-Mode' and press on Edit; the following screen will appear:

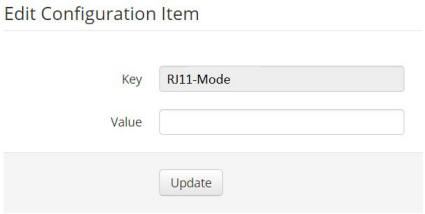

Image 9: Edit configuration item screen

5. Adjust the value to one of the following:

Value	Function
DSMR	Ready for P1 load balancing
Suspend when closed	Suspends charging when closed
Suspend when open	Suspends charging when open

6. Press *Save*
7. Send the changed configuration by clicking on the ▶ button

Image 10: Edit configuration item menu bar

8. Reset charging station to effectuate the changed configuration

5.3 Enabling Suspend Charging mode via the Service installer

The Suspend Charging mode is available in version 3.4.1 (and higher) of the Service Installer application. If applicable disable the Active Load Balancing functionality, before setting the configuration to enable Suspend Charging mode.

This can be done as follows:

1. Go to the Load balancing tab
2. Go to Active Load Balancing
3. Deactivate the box at Active Load Balancing. The functionality is now disabled.
4. Click on *Save*

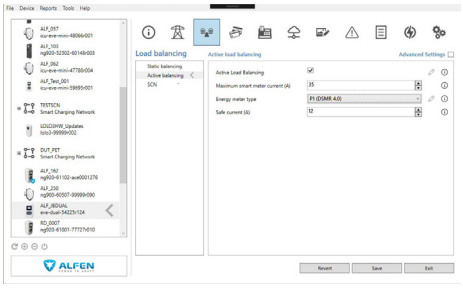

Image 11: Service installer load balancing tab

To enable Suspend charging mode:

1. Go to the *Power* tab
2. Go to *Installation*
3. Select *Allowed, suspend when closed* or *Allowed, suspend when open*
4. Click on *Save*.
5. Reboot the charging station by clicking the ⏻ button

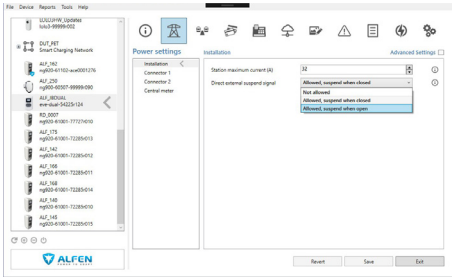

Image 12: Service installer Power settings tab

NOTICE!

Refer to the user manual and quick installation guide on how to remove and install the front cover of the charging station.

DANGER!

Refer to the specific sections in the user manual and quick installation guide manuals for relevant safety information.

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