EVlink AC Charging Station Testing Tool EVA1SADS

User Manual

02/2020

DOCA0179EN-00

Schneider Electric

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

You agree not to reproduce, other than for your own personal, noncommercial use, all or part of this document on any medium whatsoever without permission of Schneider Electric, given in writing. You also agree not to establish any hypertext links to this document or its content.
Schneider Electric does not grant any right or license for the personal and noncommercial use of the document or its content, except for a non-exclusive license to consult it on an "as is" basis, at your own risk. All other rights are reserved.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Table of Contents

Safety Information 4

Overview 6

Use 7

Checks and Tests 8

Servicing 9

Specifications 10

Safety Information

Important information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety message indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

⚠DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

Failure to follow these instructions can result in injury or equipment damage.

NOTICE

NOTICE is used to address practices not related to physical injury.

Failure to follow these instructions can result in equipment damage.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved, particularly when performing measurements and checks in low voltage applications.

Overview

Functionalities

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Never dismantle this device.
- Check that this device is in good condition before using it. Do not use it if it is damaged.
- This device may only be used by qualified and duly trained personnel.
- This device must only be used for the tests described in this document.
- Do not use this device if it is wet.
- Do not use the N, L1, L2, L3 outputs to connect an electrical load to the charging station.
- Do not connect an electrical load which consumes more than 13 A to the type F socket-outlet for more than 30 minutes.
- Disconnect this device from the charging station as soon as you stop using it.

Failure to follow these instructions will result in death or serious injury.

NOTICE

HAZARD OF CHARGING STATION AND TESTING TOOL DAMAGE

Do not inject voltage into the device sockets.

Failure to follow these instructions can result in equipment damage.

The EVlink testing tool EVA1SADS of an electric vehicle charging station in alternative current operates with all Schneider Electric EVlink charging stations equipped with a type 2 socket-outlet, or an attached cable with a type 2 connector, to which it must be connected. It can also be used with other charging stations operating in Mode 3 in compliance with standard IEC 61851-1.

The EVlink testing tool simulates the connection of an electric vehicle to the charging station, condition required for the charging station to supply power on the downstream charging circuit (type 2 socket-outlet or vehicle connector) by closing its contactor or its relay. Some charging stations may require user authentication, for example with an RFID card - refer to the charging station documentation.

The following operations are then possible using the measurement sockets and the type F socket-outlet:

Operations	Specific tools required
Check voltage presence on each phase.	
Measure the voltage between phases, between phase and neutral, between neutral and protective earthing conductor.	Measuring instruments (multimeter, residual current device tester, oscilloscope) not supplied with the EVlink testing tool.
Check the protective earthing continuity.	
Test the residual current protective device of the charging station.	
Measure the voltage between the control pilot line and the protective earthing conductor.	
Observe the signals transmitted on the control pilot line.	
Simulate various charging cable ratings.	
Check that the energy meter is correctly connected.	

By simulating the connection of an electric vehicle to the charging station, the EVlink testing tool can check that the charging station is allowed to start charging: user authenticated, charging authorized, etc.

Note: The EVlink testing tool simulates an electric vehicle charging in Mode 3 in compliance with standard IEC 61851-1. Charging control in compliance with standard ISO 15118 is not implemented.

Use

Product Description

1 Type F socket-outlet

2 Power On indicator lights on the L1, L2, L3 phases

3 Measurement sockets for the protective earthing conductor PE, the neutral N and the L1, L2, L3 phases

4 Vehicle status selector

5 CP pilot line measurement socket

6 Charging cable rating selector

7 Type 2 plug

Simulating an Electric Vehicle (CP)

The vehicle status is defined by the position of the selector (**4**). The various statuses are simulated on the CP pilot line in compliance with standard IEC 61861-1:

- Status A: vehicle not connected.
- Status B: vehicle connected not requiring charging.
- Status C: vehicle connected and ready for charging, charging area ventilation not required.
- Status E: error, short-circuit between CP and PE.

In compliance with the provisions of standard IEC 61851-1, the charging circuit downstream from the charging station stays open if no vehicle is connected and ready for charging. Under these conditions, measurements or tests cannot be performed on the power circuit downstream from the charging station.

To simulate an electric vehicle connected and ready for charging, perform the steps described below:

1. Set imperatively selector (**4**) to position A.
2. Set selector (**6**) to position N.C. if and only if the charging station is equipped with an attached cable.
3. Connect the EVlink testing tool to the charging station. If access to the type 2 socket-outlet on the charging station is locked, you must first authenticate yourself.
4. Authenticate yourself on the charging station if necessary.
5. Set selector (**4**) to position B. If the charging station has required the user authentication, this action must be performed within a limited time. Refer to the charging station documentation.
6. Set selector (**4**) to position C. Then the charging station closes the charging circuit and supplies power.

In compliance with the provisions of standard IEC 61851-1, the charging station equipped with a type 2 socket-outlet locks the cable during charging. Before disconnecting the EVlink testing tool, you must set selector (6) to position B or A.

Simulating a Cable (PP)

You can simulate all charging cable ratings defined in standard IEC 61851-1 on the proximity contact PP. The rating is chosen with selector (**6**): 13 A – 20 A – 32 A - 63 A. If the charging station is equipped with an attached cable, use position N.C.

Simulating a Fault

You can simulate a short circuit between the CP pilot line and the protective earthing conductor PE by setting the selector (**4**) to position E.

Checks and Tests

Checks and Measurements

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Use only leads with banana plugs complying with standard IEC 61010-031 when performing measurements and checks.
- Use only measuring instruments complying with standard IEC 61010-1.

Failure to follow these instructions will result in death or serious injury.

The following checks and measurements can be performed after executing all the steps described previously to simulate an electric vehicle connected and ready for charging, using the measurement sockets equipped with banana sockets:

Operations	Specific tools required
Check voltage presence on each phase (indicated by a LED lit red).	

Operations	Specific tools required
Measure the voltage between phases, between phase and neutral, between neutral and protective earthing conductor. • Check that the phase and neutral have not been inverted. • In TT and TN earthing systems, check that the voltage between neutral and protective earthing conductor does not exceed a few volts. Refer to the electric vehicle documentation to find the maximum voltage permitted by the vehicle.	Measuring instruments (multimeter, residual current device tester, oscilloscope) not supplied with the EVlink testing tool.
Check the protective earthing continuity.	
Test the residual current protective device of the charging station.	

If troubleshooting operations are carried out on the charging station, it may be useful to perform the following operations:

Operations	Specific tools required
Measure the voltage between the CP pilot line and the protective earthing conductor.	Measuring instruments (multimeter, residual current device tester, oscilloscope) not supplied with the EVlink testing tool.
Observe the signals transmitted on the CP pilot line.	

Note: To measure the voltage and observe the signals transmitted on the CP pilot line, a good knowledge of the charging control mechanisms described in standard IEC 61851-1 is required.

Functional Tests

Functional tests can be performed after executing all the steps described previously to simulate an electric vehicle connected and ready for charging.

- Simulate various charging cable ratings.
  - The maximum charging current setpoint given to the electric vehicle by the charging station must not exceed the charging cable rating measured by the charging station. The charging station must not start charging if it has not recognized the cable rating.
  - If the charging station is equipped with a user interface and if the information is available, you can check that the setpoint varies depending on the rating.
  - If the charging station is equipped with a type 2 socket-outlet, charging must not start if selector (**6**) is set to position N.C. which corresponds to an attached cable.
- Check that the energy meter is correctly connected.
  - Supplying power to an electrical load is temporarily possible using the type F domestic socket-outlet, provided that the absorbed current never exceeds 13 A.
  - In this case, you will be able to check that energy metering is carried out on phase L1.
- In case of fault, check the behavior of the charging station.
  - Set selector (**4**) to position E to simulate a fault on the pilot line. The charging station must stop the charging in progress and open the charging circuit.
  - If necessary, the charging station must report the fault locally or remotely.
- Check that the user can use the charging station when authentication is required.
  - Present the user ID (for example an RFID card) and check that charging starts.
- Check the configuration and communication of the charging station when it is supervised.
  - Simulate a complete charging cycle and check that the charging station transmits the information required to the charge point operator, for example.

Servicing

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not use liquid products to clean this device.

Failure to follow these instructions will result in death or serious injury.

The EVlink AC charger testing tool is maintenance-free. It cannot be repaired and must not be dismantled.

A dry lint-free cloth can be used to clean the device after disconnecting it from the charging station.

Specifications

Electrical safety category	CAT III – 300 V
Input voltage	230 V (phase/neutral) - 400 V (phase/phase)
Frequency	50 Hz
Maximum current on the type F socket-outlet	13 A (must not be used permanently)
Degree of protection	IP20
Operating temperature	-10 °C to 45 °C
Storage temperature	-25 °C to 60 °C
Air relative humidity	max. 80 % (no condensation)