PRODUCT BROCHURE

Test EV and EVSE Charging Interfaces

Overcoming the challenges of interoperability in e-mobility

KEYSIGHT

Charging Test Solution

One of the decisive factors for the breakthrough of e-mobility is to enable all drivers to charge their electric vehicle (EV) conveniently and safely. This places high demands on the charging interfaces at both sides of the charging adapter – at the charging station and within the vehicle. Alongside to the power itself, error-free communication between the EV and EV supply equipment (EVSE) guarantees a reliable charging process. This requires standard-compliant procedures and compatible technologies. Other factors to consider are the local grid supply, regional climatic conditions, and compatibility with different EVs and EVSEs.

SL1040A Scienlab Charging Discovery System – Portable Series

Keysight's Scienlab Charging Discovery System (CDS) is an all-in-one system that covers all charging test areas from mobile use to comprehensive application in the laboratory and provides independent, reproducible testing of any AC and DC charging interface of EVs and EVSEs through real-time emulation of all electrical interfaces (including communication signals and energy transfer) of the counterpart.

The Scienlab CDS – Portable Series helps you to comply with current and future charging standards up to 400 kW to ensure conformance and interoperability.

Thanks to its modular and innovative design, the SL1040A Scienlab CDS can be configured to your specific needs and replace multiple real EVs/EVSEs with one test solution to ensure an optimal price-performance ratio.

Highlights

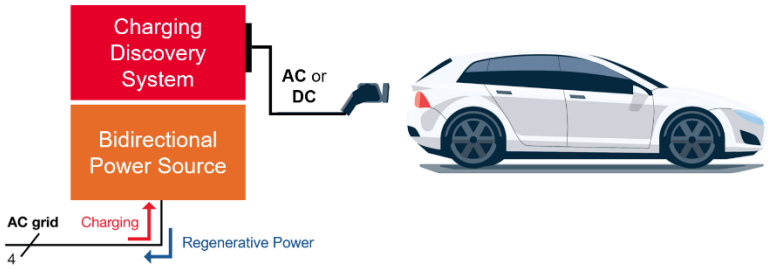
- Automated functional, conformance, interoperability and quality testing for R&D, and end-of-line (EOL)
- Time synchronous measurement and decoding of communication and power signals
- Scalable and future-proof hardware design according to CharIN e.V. CCS Test System
- CE, UL and KC-Mark conformance, certified by CSA Group
- Extensive test case library for automated conformance testing of CCS, CHAdeMO and GB/T standards

The following use cases are supported by the Charging Discovery System:

Use case 1: EV test

In this use case, the CDS serves as a universal but configurable charging infrastructure (e.g., DC charging column or AC wall box).

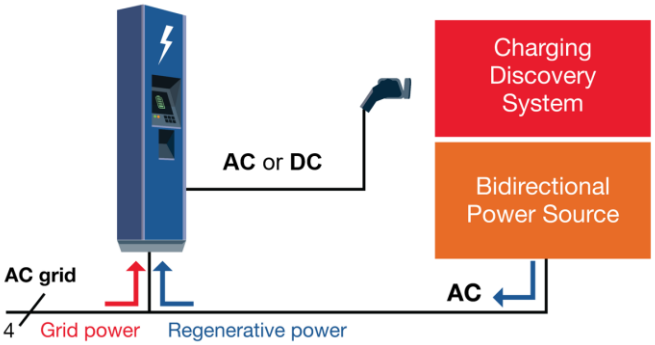
Use it for functional testing of the charging interface of any electric vehicle, as well as for safety, interoperability, conformance, and durability testing.



Use case 2: EVSE test

Here, the CDS is a universal but configurable charging interface emulation of an electric vehicle.

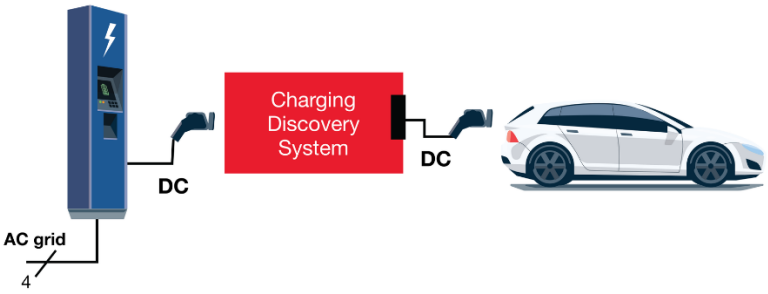
This allows functional, safety interoperability, conformance, and durability testing of any EVSE product.



Use case 3: Man-in-the-Middle

In this third use case, the CDS is connected between two real devices to capture all electrical signals and digital communication between an EVSE and EV.

This allows the user to identify and trace potential interoperability issues.



Application example

Keysight's SL1202A Scienlab Regenerative AC Emulator (right) with SL1040A Scienlab Charging Discovery System – Portable Series (middle) testing an EV's onboard charger (left).

Optimum Features for Every Test Requirement

All-in-one

The CDS provides all necessary functions required for the testing of charging infrastructure components. Additional analysis or measurement systems are not necessary. Predefined test sequences enable quick tests. Digital inputs and outputs allow locking of charging inlets as well as triggering of LEDs and other freely-usable I/Os.

Open system architecture

Realistic emulation of EV and EVSE requires standard-compliant emulation of the behavior of each emulated side. The CDS offers a freely-parameterizable state machine that provides the required degree of freedom. Errors can thus be emulated in a controlled environment to examine the response of the DUT in all use cases and failures.

International standards and directives

The CDS supports the following charging communication standards:

- AC charging mode according to IEC 61851-1 (PWM)
- AC charging mode according to SAE J1772 (PWM)
- AC charging mode according to GB/T 18487.1 (PWM)
- AC charging mode according to ISO 15118
- AC charging mode according to Bharat AC fast IS17017 Part 1 (PWM)
- DC fast charging mode according to DIN SPEC 70121
- DC fast charging mode according to ISO 15118
- DC fast charging mode according to GB/T 27930
- DC fast charging mode according to CHAdeMO
- DC fast charging mode according to Bharat DC (CAN)

Integrated HV measuring technology

For reproducible test results and proper interpretation of the control pilot, the measuring technology must clearly exceed the accuracy asked for in the standards. The CDS therefore measures all relevant control and proximity pilot parameters with maximum accuracy.

Worldwide EV charging inlets and adapters

The CDS can be configured with all available EV charging inlets and adapters for AC and DC which are exchangeable by a user in less than one minute.

Electrical Specification

SL1040A Scienlab Charging Discovery System – Portable Series

Operating ratings	AC ratings	DC ratings
Voltage	0 – 300 V_{L-N} rms 0 – 500 V_{L-L} rms	± 1000 V
Current	+ 32 A rms (per phase)	± 350 A (continuous) ± 400 A (approx. 90 min followed by 30 min cooling)

Extend the Capabilities of your Charging Test Solution

Meet the SL1200A Series Scienlab Regenerative AC Emulator, 3 Phase

The Keysight SL1200A Series Scienlab Regenerative 3-Phase AC Emulator can emulate the AC power grid to fully test EV and EVSE charging with the SL1040A and SL1047A Scienlab Charging Discovery Systems. The SL1200A handles all your three-phase AC test needs by:

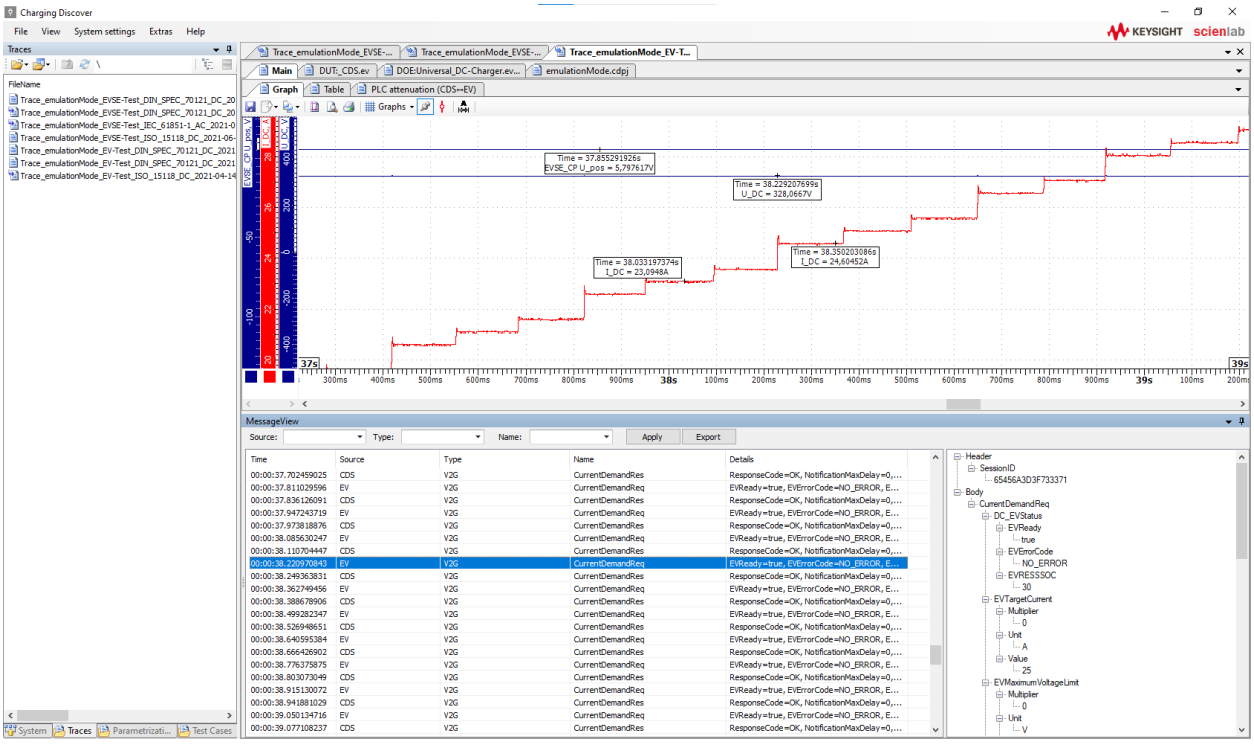
- Providing up to 1200 VL-L; up to 130 A; up to 630 kVA
- Achieving 1200 VL-L at full specifications without extra equipment, such as a transformer
- Saving energy with 100% regenerative (bidirectional) power solution with > 85% efficiency

Software to control Scienlab Charging Discovery Systems

Meet the SL1093A Scienlab Charging Discover Test Software

The Scienlab Charging Discover test software controls the Scienlab Charging Discovery System (CDS). With this up-to-date, user-friendly software, you can operate the system, visualize measured values, record test sequences, and generate reports for trusted insights.

- Live and synchronized views of recorded measurements
- Test editor for creating individual test cases
- Powerful graph view for analyzing recorded traces
- Export of measured values (for example MDF)
- Remote functionality for Hardware in the Loop test benches



Meet the SL1300A and SL14XXA Scienlab Test Case Libraries

Scienlab Test Case Libraries provide complete test case libraries for all important charging conformance and interoperability standards. Each library is developed according to official specification and carefully verified with all CDS hardware configurations and every software release version. Hence, it is the quickest and most simple way to get valid test results out of the box.

To Learn More

- SL1040A Series Scienlab Charging Discovery System (CDS)
- SL1047A Scienlab Charging Discovery System (CDS) – High-Power Series
- SL1200A Series Scienlab Regenerative 3-Phase AC Emulator
- SL1041B Scienlab Dynamic DC Emulator Mid-Power Series
- SL1800A Series Scienlab Regenerative DC Emulator
- SL1093A Scienlab Charging Discover Test Software
- SL14XXA Scienlab Test Case Library – TTCN-3
- SL1300A Scienlab Test Case Library – Charging Discover

Contact Keysight Premier Rental Partners to Get a Quote Now!

Premier Rental Partners

Americas

Electro Rent: https://www.electrorent.com/us/manufacturers/keysight-technologies

TRS-RenTelco: https://www.trsrentelco.com/keysight

Europe, Middle East, India and Africa

Electro Rent: https://www.electrorent.com/eu/manufacturers/keysight-technologies

TRS-RenTelco: https://www.trsrentelco.com/keysight

Asia Pacific

Orix Rentec: http://www.orixrentec.jp/index.html

SMFL Rental Company Limited: http://www.smfl-r.co.jp/english

Yokogawa Rental & Lease: http://www.yrl.com/index.html

Lotte Rental: http://www.lotterental.com

Find a Premier or Authorized Rental Partner nearest you:
www.keysight.com/find/rentalpartners

Keysight & Our Rental Network
RIGHT Instrument. FLEXIBLE Terms. FAST Delivery.

KEYSIGHT

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.