

Delphi Portable Electric Vehicle Charger

Delphi's Portable Electric Vehicle Charger is a type of portable Electric Vehicle Supply Equipment (EVSE) with cord connector that enables convenient charging of Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV). This safe, easy-to-use, Level 1 portable charging cordset allows EV owners to charge their vehicles anywhere from an available 120VAC service. The Delphi Portable Electric Vehicle Charger is formally listed as Electric Vehicle Supply Equipment with Underwriters Laboratory Inc. (UL) and Intertek (ETL).

The technology in this high-quality cordset enables a seamless transition between the automotive and residential/commercial environments. This charging system consists of four major components, which together deliver a robust and reliable charge cycle to an electric vehicle.

- ICCB (In-Cable Control Box) — contains charge station technology
- Cable — 20 feet (6 meters) of UL-Type EVJE
- Cord connector — universal SAE J1772 or IEC Type 2 design
- Vehicle inlet — includes wiring to on-board vehicle charger



Delphi Portable Electric Vehicle Charger with 120VAC/15A, level 1 service

The system is designed to current industry standards, making it compatible with many battery electric and plug-in hybrid electric vehicles.

▶ Benefits

- Complete charging system, designed for both functionality and styling
 - Provides convenience, safety and comfort for owners
- User-friendly system plugs into existing electrical infrastructure
 - Male plug of charge coupler connector mates directly to a built-in female inlet on vehicle
 - EVSE end provides standard, grounded UL grid plug connection to household 120VAC/15A service
- Engineered to provide a robust, reliable charge
- Systems can be customized for global applications based on local supply voltage and grid plug interface

▶ Primary Functions

- Multiple levels of safety for the user, the EV and the charging equipment
- Service ground monitor
- Charger circuit interrupt device (CCID20) with automatic reclosure
 - After a nuisance trip, the unit will self check and resume charging
- LED indicators
- Power (input power present)
- Charging (output power provided to vehicle)
- Power fault (missing/bad safety ground)
- Charging fault (problem on output side, e.g. CCID trip, pilot error)
- Pushbutton-controlled latch for safe and secure connection

- Industry standard compliance, including
 - SAE J1772
 - UL
 - IEC
 - FCC
 - NEC Article 625
 - Outdoor rated (NEMA 4) enclosure

► Features

- ICCB
 - UL 2231 — Safety of Personnel Protection Systems for EV Supply Circuits
 - Ground fault protection with fully automatic retest and reclosure
 - UL 2202 — Electric Vehicle (EV) Charging System Equipment
 - UL 2594 — Safety of EV Supply Equipment
 - Reclosure
 - Allows charging to resume after a fault
 - If fault clears, no user intervention is required
 - Contactor monitoring circuit
 - EVSE constantly checks contacts to verify integrity of AC charging path
 - CCID self test
 - Self-check feature eliminates the need for monthly testing by user
- Cord Connector
 - UL 2251 — Safety of Plugs, Receptacles, and Couplers for EVs
 - Sealed cord connector protects internal components
 - All terminal interfaces and crimps sealed from environment when mated
 - Microswitch-based proximity switch
 - Ergonomic handle, rubberized grip
 - Knurled button for easy, non-slip latch activation/deactivation
- Vehicle Inlet
 - Hinged cover with gasket to protect receptacle from elements
 - Drain holes to eliminate water that might collect in terminal cavities

► Typical Applications

Delphi's Portable Electric Vehicle Charger can be used with Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV). Delphi's engineers can provide customized designs for global applications, based on local supply voltage and regional grid plug interface.



The Delphi Portable Electric Vehicle Charger is available with several grid plug interfaces. The image above shows a Schuko type grid plug used in European applications. The image below shows a PSB-16 or PSB-10 grid plug used in China.



▶ **General Specifications**

Service entrance	120V, 15A, single phase, 2-wire with safety ground
EVSE dimensions	Length: 11 in. (279 mm) Width: 4 in. (102 mm) Depth: 3 in. (76 mm)
Operating temperatures	-40°C to +70°C
Cable	20 feet (6 meters) long, 5-conductor, 300 V, EVJE
SAE J1772-defined terminal interface	Two 3.6 mm power pins One 2.8 mm ground pin Two 1.5 mm control pins for pilot and proximity signals
NEMA 4 construction	

▶ **Standards**

The Delphi Portable Electric Vehicle Charger complies with the following:

- UL 1998
 - Software in Programmable Components
- UL 2202
 - Safety of EV Charging System Equipment
- UL 2231
 - Safety of Personnel Protection Systems for EV Supply Circuits
- UL 2251
 - Safety of Plugs, Receptacles, and Couplers for EVs
- UL 2594
 - Safety of EV Supply Equipment
- IEC61851-1
 - Electric vehicle conductive charging system
 - Part 1: General requirements
- IEC 62196-1
 - Plugs, socket-outlets, vehicle connectors and vehicle inlets — Conductive charging of electric vehicles
 - Part 1: General requirements
- IEC 62196-2
 - Plugs, socket-outlets, vehicle connectors and vehicle inlets — Conductive charging of electric vehicles
 - Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories
- NEC 625
 - Electric Vehicle Charging System
- SAE J1772
 - EV and Plug-in Hybrid Electric Vehicle Conductive Charge Coupler