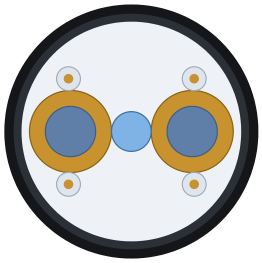
600 A Liquid-Cooled DC Charging Cable

SORIVO Product Series: **ultra-fast charging cable** | 600 A · 1000 V DC | direct liquid cooling | CCS1 / CCS2 / GB/T / CHAdeMO / NACS



- TPU sheath — halogen-free, abrasion resistant
- Coolant channel inside the power leg — direct liquid cooling
- Control and signal cores — CP, PE, temperature monitoring
- Power conductor, 2 AWG ≈ 33.6 mm² per leg
- Central coolant path

APPLICATION

Liquid-cooled DC charging cable assembly for 600 A ultra-fast charging: the coolant runs inside the cable, in direct contact with the power legs, so the copper stays at a workable cross-section while the current goes up. Supplied terminated with CCS1, CCS2, GB/T, CHAdeMO or NACS (SAE J3400) connectors, or as cable only.

CONSTRUCTION

Power Legs
2 × 2 AWG (≈ 2 × 33.6 mm²), flexible copper, each with an internal coolant channel

Cooling
Direct liquid cooling — coolant circulates against the conductor, not in an external jacket

Control Cores
Signal and control cores for CP, PE and DC contact temperature monitoring

Insulation
Silicone

Sheath
TPU, halogen-free

WHY 33 MM² CAN CARRY 600 A

At 600 A a naturally cooled copper conductor needs roughly three to four times the section this cable uses. Current density here is about **18 A/mm²** against the 4–6 A/mm² an air-cooled design works to — the coolant carries away what the copper cannot shed.

STANDARDS AND STATUS

- IEC TS 62893-4-2:2021 — DC charging cables for use with a thermal management system
- IEC 62196-3 — DC connector dimensions; ratings to IEC 62196-1
- UL 2251-2022 — North American plug, receptacle and coupler
- GB/T 20234.3-2023 — Chinese DC charging interface
- SAE J3400 series — NACS connector
- IEC 60332-1-2 — flame; UL 94 V-0 — housing material

TECHNICAL PARAMETERS

Rated Current
600 A DC
250 / 300 / 350 A variants

Rated Voltage
1000 V DC
1500 V DC available on request

Charging Power
600 kW at 600 A × 1000 V DC

Conductor Temperature
90 °C rated, to IEC TS 62893-4-2

Cooling
Direct liquid cooling, integrated circuit

Contact Temperature
≤ 100 °C at rated current (UL 2251-2022)

Ingress Protection
IP67 mated / IP55 at the back of the inlet

Mating Cycles
> 10 000, unloaded

600 A	90 °C	IP67
1000 V DC	rated conductor	mated

COOLING CHANGES THE CONDUCTOR, NOT THE RATING

Table 1 — the same 600 A from two very different cables

CONDITION	600 A NEEDS	CURRENT DENSITY
Liquid-cooled, direct (this cable)	2 × 2 AWG ≈ 33.6 mm² per leg	≈ 18 A/mm²
Naturally cooled, air	roughly 100–150 mm² per leg	roughly 4–6 A/mm²

The comparison is the specification. A 600 A air-cooled cable is a heavy, stiff thing of roughly 100–150 mm² per leg; this one is 33.6 mm² because the coolant removes the heat at source. Quoting "600 A" without saying which cooling condition it assumes is the standard way these datasheets mislead.

ELECTRICAL AND MECHANICAL RATINGS

Table 2 — terminal values for the terminated assembly

PARAMETER	VALUE	BASIS
Insulation resistance	≥ 2000 MΩ at 1000 V DC	Manufacturer test
Withstand voltage	3200 V AC	Manufacturer test
Contact resistance	≤ 0.5 mΩ	Manufacturer test
Contact temperature	≤ 100 °C at rated current	UL 2251-2022 criterion, absolute temperature
Terminal temperature rise	< 50 K	Measured against the ambient stated in the test report
Contact plating	Copper alloy, silver plated	UL 2251-2022 suggests ≥ 5 µm Ag
Housing material	Thermoplastic, UL 94 V-0	Flammability ≥ HB and heat index ≥ 100 °C also required
Mating cycles	> 10 000, unloaded	Manufacturer test
Ingress protection	IP67 mated, IP55 inlet back	Manufacturer-declared

THREE TEMPERATURES, THREE MEANINGS

Table 3 — do not merge them into one range

STATEMENT	VALUE	WHAT IT ACTUALLY IS
Rated conductor temperature	90 °C	The cable rating, per IEC TS 62893-4-2
Silicone insulation capability	up to +180 °C	A material property, not a cable rating
TPU sheath	limits the assembly	Whatever the cores can take, the sheath sets the continuous limit
Connector ambient	-30 °C to +50 °C	Connector rating
Component thermal cycling	-40 °C to +125 °C	UL 2251-2022 test condition, not an operating range

"-60 °C to +180 °C" is not a cable rating. It takes the best low-temperature figure from one material and the best high-temperature figure from another, and prints them as one range. What a buyer can rely on is 90 °C conductor, and a sheath that sets the assembly limit below the insulation's capability.

CONNECTOR STANDARDS BY MARKET

Table 4 — the edition is part of the claim

MARKET	CONNECTOR STANDARD	NOTE
Europe / IEC	IEC 62196-3, ratings to IEC 62196-1	Dimensions and interchangeability
North America	UL 2251-2022	600 V ceiling in pre-2022 editions — the edition matters for 1000 V
China	GB/T 20234.3-2023	Raised to 800 A / 800 kW and added active cooling
NACS	SAE J3400 series	Connector option, not a separate cable

1500 V DC and 800 A are available on request, not standard. Both figures sit inside what UL 2251-2022 and GB/T 20234.3-2023 permit, but a standard permitting a rating is not a product holding one. A rating applies only to the configuration covered by its own type test.

Disclaimer. The information in this datasheet is for guidance only and is subject to change without notice. Dimensions and masses are nominal and subject to manufacturing tolerance; confirm against the certificate of the delivered product. This document is uncontrolled once printed or forwarded — the current revision, issued under document number SORIVO-TM-EVDC-001, governs. © 2026 SORIVO. All rights reserved. Ratings apply to the terminated assembly as tested; a cable sold without connectors carries no connector rating. Coolant flow, inlet temperature and pressure drop are project values agreed for the project, not catalogue figures.