

AMP+ CHARGING INLETS & ACTUATORS

Quick, reliable, and safe energy transfer from the grid to the car

PRODUCT CATALOG



TURNING IDEAS INTO TECHNOLOGIES

TE Connectivity's E-mobility Solutions Open a Pathway to a Greener, More Sustainable Future

There's never been a more exciting time to be in the automotive industry! We're accelerating toward a new reality whereby the number of internal-combustion-engine cars on our roads will eventually be surpassed by electric vehicles. Automakers are responding by rewriting their business models and investing hundreds of billions of dollars into EV R&D.

TE Connectivity (TE) has led the electrification and sustainability charge since its inception, with clear-cut expertise in electrical interface design. Our products cover the complete spectrum of EV energy transfer and meet the increased power ratings and higher thermal and vibration requirements that tomorrow's electric, hybrid, and plug-in-hybrid vehicles demand.

Our vast E-mobility portfolio addresses four major technological application areas:



E-drive Systems

Our high-current interconnection systems are designed to move energy efficiently and reliably from the charging system to the battery, and from the battery to the electric motor.



Auxiliary Systems

Our physically smaller auxiliary interconnection systems are designed for lower-current applications, such as cabin heating and cooling systems, while reducing weight and bulk.



Charging Path

As batteries get bigger and EVs travel farther, the need for fast high-powered charging increases. Our charging inlets transfer energy quickly, reliably, and safely from the grid to the car.



Energy Storage

TE offers a full catalog of battery and fuel cell interconnection and protection solutions that increase safety, time to recharge, and driving range.

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TE's AMP+ charging inlets and actuators are designed to meet the challenges of tomorrow's electric, hybrid, and plug-in hybrid vehicles and can be modified for virtually any transportation need.

Our portfolio supports all common international interface standards, including AC, DC, and combined charging system (CCS) variants in multiple cable exit directions and temperature sensing options.

Our newest family of inlets, the CI 500 Series, can transfer 500 kilowatts at currents of up to 500 continuous amps, which represents the highest load state available for EVs today. In addition to providing fully integrated inlets, TE offers locking actuators as stand-alone devices. An actuator is a safety device that physically locks the charging plug into the inlet while the vehicle is charging, which prevents accidental or forced removal.

Designed for increased performance demands and durability, TE's charging inlets are scalable to fit all electrical and electronic vehicle architectures, from discrete point-to-point operation or via distributed intelligent control.

AMP+ CHARGING INLETS - PORTFOLIO AT A GLANCE

		Region	AC Current Max	AC Voltage Max	DC Current Max	DC Voltage Max	Charging Power Max
	CI 500 CCS Type 1	Americas, Korea	48 A	250 V	500 A*/ 335 A	1000 V	12 kW (AC) 500 kW (DC)
Charging Inlet 500 Series	CI 500 CCS Type 2	Europe, ROW	32 A	480 V/ 250 V	500 A*/ 335 A	1000 V	22 kW (AC) 500 kW (DC)
	CI 500 Japan DC	Japan	-	-	500 A*/ 335 A	1000 V	500 kW (DC)
Charging Inlet 250 Series	CI 250 Type GB DC	China	-	-	250 A	1000 V	250 kW (DC)
Charging	CI 200 CCS Type 1	Americas, Korea	48 A	250V	200 A	1000 V	12 kW (AC) 200 kW (DC)
200 Series	CI 200 CCS Type 2	Europe, ROW	32 A	480 V/ 250 V	250A	1000 V	22 kW (AC) 250 kW (DC)
	Cl 32 Type 1	Americas, Korea, Japan	48 A	250 V	_	_	12 kW (AC)
Charging Inlet 32 Series	CI 32 Type 2	Europe, ROW	32 A	480 V/ 250 V	-	-	22 kW (AC)
	CI 32 Type GB AC	China	32 A	440 V/ 250 V	_	_	22 kW (AC)

* 500 amps of current requires active cooling at the charging station and thermal sensing in the inlet.

AMP+ CHARGING INLET ACTUATORS

In addition to fully integrated charging inlets, TE manufactures and markets a suite of actuators that lock the charging station connector plug into the inlet, preventing the plug from being removed from the vehicle accidentally or by force during a charging cycle. The actuator is mounted to the inlet and has a locking pin that engages to hold the connector in place as a safety mechanism, confirming that every charging cycle is conducted reliably and securely.



TE's actuators are fortified to work in harsh automotive environments, conforming to the latest IEC 62196 and GB/T 20234 standards. They are used in a variety of electric vehicles – such as scooters, motorcycles, trucks, buses, ferries, and aircraft – to increase safety levels.



AMP+ CHARGING INLET ACTUATORS: KEY BENEFITS

- Locks the charging plug in place, preventing unintended or premature disconnection and providing greater safety
- Available as a stand-alone product
- Compliant with IEC 62196 and GB/T 20234 standards

- Lifetime reliability for up to 80,000 cycles
- 12 configurations that support "plug and play" integration

CHARGING INLET 500 SERIES



- Flap assembly: 2337030
- AC/DC dust cover with wire strap: 2411946, 2331969, 2333944

AMP+ CI 500 Series Charging Inlet - CCS Type 2



Technical Features

Terminal Size/System: Round contact

AC Contacts: 6 mm² wire size

DC Contacts: 95 mm² wire size

Voltage Rating AC: 480 VAC

Voltage Rating DC: 1000 VDC

Current Capacity AC: 32 A

Current Capacity DC: 500 A (cooled infrastructure); 335 A (uncooled infrastructure)

IP Rating: IP55 (front, mated) IP67 (rear)

Cable Outlet: 90°/90° left 90°/90° right 90°/180° right 180°/180°

LED Charging Indicator: No

Finger Protection: Yes

Vibration Level: SG-2 (LV 215-1)

Application Specification: <u>114-94727</u> (90°/90°) <u>114-94728</u> (90°/180°) <u>114-94729</u> (180°/180°)

Product Specification: 108-94843

Drawing: 2386778

Standards: IEC 62196

Optional Accessories:

- Flap assembly: 2337030
- AC/DC dust cover with wire strap: 2411949, 2331969,, 2333944





Drawing <u>2386778</u>





Technical Features

Poles: 2p + 7p

Terminal Size/System: Round contact

DC Contacts: 16 mm² to 95 mm² wire size

Voltage Rating DC: 1000 VDC max.

Current Carrying Capacity: 80 A to 600 A

IP Rating (mated): IPX7 immersion with pressure IPX9K on interface, flap open

Cable Outlet: 180°/180°

LED Charging Indicator: No

Assembly Type: Rear

Temperature Sensor: 2 Pcs NTC for DC+/DC R25°C = 10 k Ω ±1% B25/50=3950k ±1%

Application Specification: <u>114-160029</u>

Product Specification: 108-160060

Drawing: 2397227

Standards:

GB/T 20234.1 GB/T 20234.3

Optional Accessories:

• Dust cover with wire strap: 2395348-1

AMP+ CI 250 Series Charging Inlet - Type GB DC



Drawing 2397227

Item	Installation Type	Cable Exit Direction	Current	Wire Size
1			80 A	16 mm ²
2		_	100 A	25 mm ²
3	Poor	1900	150 A	35 mm ²
4	Kear	180 -	200 A	50 mm ²
5		_	250 A	70 mm ²
6			250-600 A	95 mm ²

Solutions available for copper wire, aluminum wire, and aluminum row.

CHARGING INLET 200 SERIES



• AC/DC dust cover with wire strap: 2411946, 2331969, 2333944

AMP+ CI 200 Series Charging Inlet - CCS Type 2 Front View Side View Rear View **Technical Features** Terminal Size/System: Round contact AC Contacts: 6 mm² wire size DC Contacts: 50 mm² wire size Voltage Rating AC: 480 VAC Voltage Raging DC: 1,000 VDC Exploded View **Current Capacity AC: Current Capacity DC: IP Rating:** IP55 (front, mated) IP67 (rear) Cable Outlet: 90°/90° left 90°/90° right 90°/180° left 90°/180° right 180°/180° (n **LED Charging Indicator: Finger Protection:** Vibration Level: SG-2 (LV 215-1) Application Specification: 114-94650 (90°/90°) <u>114-94651 (90°/180°)</u> <u>114-94763</u> (180°/180°) **Product Specification:** <u>108-94778</u> Drawing 2337016

Drawing: 2337016

32 A

200 A

No

Yes

Standards: IEC 62196

Optional Accessories:

- Flap assembly: 2337030 • AC/DC dust cover with wire
- strap: 2411949, 2331969, 2333944

CHARGING INLET 200 SERIES



* Drawing number is not the order number.

strap: 2411946, 2331969,

2333944

250 VAC

32A

Yes

Yes

2368475

AMP+ CI 32ED Series Charging Inlet - Type 1 with LED Indicator Front View Side View Rear View (@ **Technical Features** Terminal Size/System: Round contact AC Contacts: 6 mm² wire size Voltage Rating AC: **Current Capacity AC: IP Rating:** IP55 (front, mated) Exploded View IP67 (rear) **Cable Outlet:** 90° left/right/down **LED Charging Indicator: Finger Protection:** Vibration Level: SG-2 (LV 215-1) **Application Specification:** <u>114-94652</u> **Product Specification:** 108-94779 Drawing: Standards: IEC 62196 **Optional Accessories:** • AC dust cover with wire strap: 2411949, 2333944

Drawing 2368475





Three-phase charging option

Drawing 2368472

* Drawing number is not the order number.

Technical Features

Terminal Size/System: Round contact

AC Contacts: 6 mm² wire size

Voltage Rating AC: 480 VAC

Current Capacity AC: 32 A

IP Rating: IP55 (front, mated) IP67 (rear)

Cable Outlet: 90° left/right/down

LED Charging Indicator: Yes

Finger Protection: Yes

Vibration Level: SG-2 (LV 215-1)

Application Specification: <u>114-94653</u>

Product Specification: <u>108-94780</u>

Drawing: 2368472

Standards: IEC 62196

Optional Accessories:

• AC dust cover with wire strap: 2411949, 2333944

32 A

Yes

Yes



Drawing 2368478

CHARGING INLET 32 SERIES



Actuator not required for current levels less than 16 A.



Type 1 Option

IP Rating, Mated: IP65, IP67 Lifetime Cycles: 50k Micro-Switch variant 84k light barrier variant

Product Specification:

108-94519 Drawing: 2392464 Standards: IEC 62196 GB/T 20234 Type 2 Option



Type GB AC Option

Drawing <u>2392464</u>



Technical Features

Terminal Size/System: Round contact

AC Contacts: 6 mm² wire size

DC Contacts: 50 mm² wire size

Cable Length: 2 m or 4 m

Voltage Rating AC: 250 VAC

Voltage Rating DC: 600 VDC

Current Capacity AC: 32 A

Current Capacity DC: 200 A

IP Rating: IP55 (front, mated) IP67 (rear)

Cable Outlet: 90°/90° left 90°/90° right 90°/180° left 90°/180° right 180°/180°

LED Charging Indicator: No

Finger Protection: Yes

Vibration Level: SG-2 (LV 215-1)

Product Specification: 108-94777

Drawing: 2406969

Standards: IEC 62196

Optional Accessories::

• Flap assembly: 2337030

• AC/DC dust cover with wire strap: 2411946, 2331969, 2333944

AMP+ CI 200 Series Charging Harness Assembly - CCS Type 1





Drawing <u>2406969</u>

CHARGING INLET 200 SERIES



<u>2408732</u>

Standards: IEC 62196

Optional Accessories:

- Flap assembly: 2337030
- AC/DC dust cover with wire strap: 2411949, 2331969, 2333944



CHARGING INLET 200 SERIES

Technical Features

Terminal Size/System: Round contact

6 mm² wire size

DC Contacts: 50 / 70 mm² wire size

2 m or 4 m

480 VAC

1,000 VDC

Current Capacity AC: 200 / 250 Å

Current Capacity DC: 200 A

IP Rating: IP67 (rear)

90°/90° left 90°/90° right 180°/180°

Yes

Yes

SG-2 (LV 215-1)

Product Specification: 108-94778

Drawing: Available upon request

Standards: IEC 62196

Optional Accessories:

• Flap assembly: 2337030 • AC/DC dust cover with wire strap: 2411946, 2331969, 2333944



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CHARGING INLET 32 SERIES



Drawing <u>2408729</u>

* Drawing number is not the order number.

2411949, 2333944

CHARGING INLET 32 SERIES



INDUSTRIAL & COMMERCIAL TRANSPORTATION

E-mobility Solutions for Industrial & Commercial Vehicles

The trend in electric drivetrains extends well beyond passenger cars. Industrial and commercial vehicles – from light-duty equipment to delivery vans, tractor-trailers, mass transit, and heavy-duty construction, farming and mining equipment – are also making the move toward adopting fully electrified powertrain architectures. These commercial applications demand extremely high power and flawless operation in very harsh environments where failure is not an option.

Our end-to-end HIVONEX connectivity and charging solutions are designed to help OEMs transition into the next generation of E-mobility and can be tailored to the increased power transfer needs of industrial and commercial vehicle architectures.

To learn more about our HIVONEX e-mobility connector portfolio, please visit our website: <u>Rugged Solutions for Truck, Bus and</u> <u>Off-Road Vehicles</u>, or reach out to us via our <u>contact us page</u>.



PowerTube Connector

A modular and scalable solution for reliable and safe connectivity



IPT-HD Power Bolt Connector

A bolted connectivity solution that offers high performance and easier assembly



ICT Charging Inlets

A ruggedized charging solution with increased modularity – TE offers pre-assembled kits and cable assemblies for added convenience



HVA HD400 High-Voltage Accessories Connector

A compact, sealed solution for nearly any high-voltage accessory in your vehicle design



Application Tooling Solutions for High-Voltage Wire Processing & Termination

A quality connection is essential to delivering high performance and reliability in extreme environments. From crimping a terminal onto a wire or pressing a connector onto a board, our equipment and services are designed to maximize production uptime, extend tooling life, and minimize manufacturing waste.

High-voltage wires require clean, precise cuts to maintain quality and safety standards. Our wire processing solutions for electric vehicle applications give you the power you need to terminate connectors and process large wires quickly, flexibly, and affordably.

Additionally, our high-force, benchtop presses can produce up to 178kN (20T) of crimp force to process terminations for wires up to 120 mm². They support a wide variety of modular die sets that can crimp both TE and non TE terminals.

For more information, visit our Application Tooling page,

or contact us at

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APPLICATION TOOLING

IP Code | Elements and Significance acc. to IEC 60529 and DIN 40050



IP Code | Elements and Significance acc. to IEC 60529 and DIN 40050

2nd Digit	Agair	nst Water	2nd Digit	Again	ist Water
0		Not protected.	5		Protected against jetting water.
1		Protected against vertically dripping water.	6		Protected against powerfully jetting water.
2		Protected against dripping water when tilted up to 15°.	6K		Protected against powerfully jetting water with increased pressure (Automotive).
3	60°	Protected against spraying water (up to 60° inclination).	7		Protected against the temporary effects of immersion up to 1 meter.
4		Protected against splashing water.	8		Protected against continuous submersion agreed with customer, but more severe than code 7.
4K		Protected against splashing water with increased pressure.	9K		Protected against high-pressure/ steam-jet cleaning (Automotive).

TE CONNECTIVITY ONLINE

<u>TE.com</u> offers an enhanced digital experience, with more than 250,000 parts profiled. The site has deep, rich product data and easier access to tools and services. Other offerings include improved search and navigation combined with knowledge and idea sharing.



1

Products By Applications

Learn more about our e-mobility solutions by searching according to the vehicle's application area:

www.te.com/e-mobility



Search for a specific product by category, part number or document number.

www.TE.com



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