

NEXT GENERATION AMP+ CHARGING INLETS

HYBRID & ELECTRIC MOBILITY SOLUTIONS



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HIGH-VOLTAGE CONNECTIVITY SOLUTIONS



From the
Charging
Point ...



... to the
Battery ...



... to the
E-Motor.



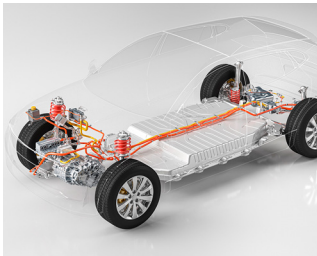
TE Connectivity's (TE) portfolio of connectivity solutions for hybrid and electric vehicles cover the entire range of electric powertrains, providing a complete line of connectors, relays, contactors, harnesses and disconnects to safely connect and protect the power flow.

Our hybrid and electric mobility connectivity technologies leverage decades of experience with high-voltage generation, transmission and distribution. These are classified in the following four application areas:



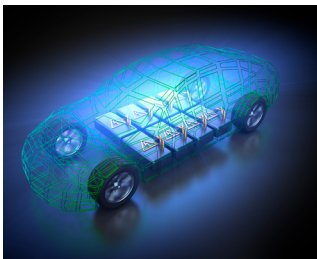
HV AUXILIARY MODULES

- DC / DC Converter
- On-Board Charger
- HV Heater
- HV Climate Compressor



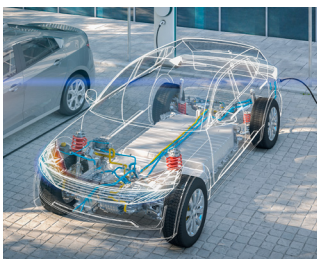
HV POWERTRAIN

- Inverter
- E-Motor
- HV Battery




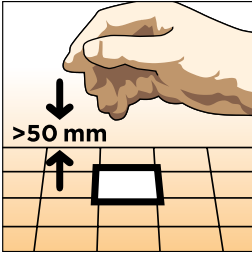

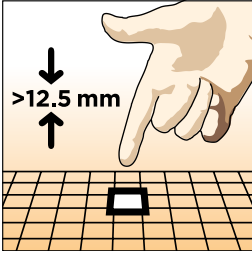
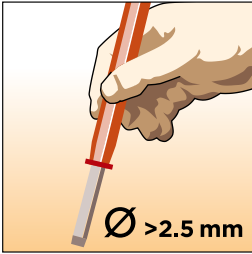
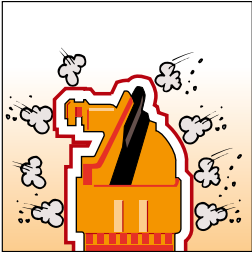
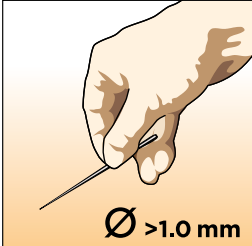
BATTERY CONNECTIVITY

- Battery Modules
- Battery Protection
- Battery Cells



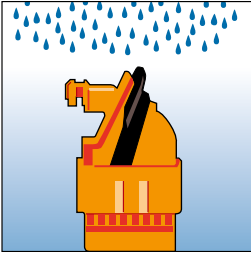

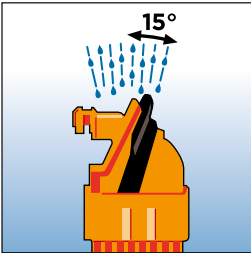

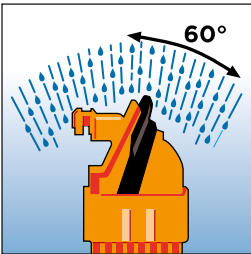
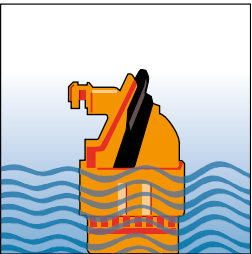
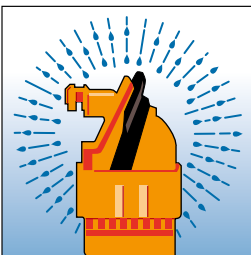
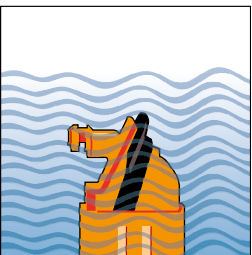
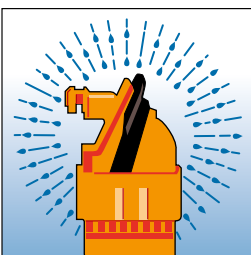



CHARGING INLET

- AC charging
- Fast charging:
combined charging system (CCS)

1st Digit	Against Foreign Objects (incl. Dust)	1st Digit	Against Foreign Objects (incl. Dust)	
0		Not protected.	5K	
1		Protected against solid objects greater than 50 mm (ex. back of hand).		Dust protected.
2		Protected against solid objects greater than 12.5 mm (ex. finger).	6K	
3		Protected against solid objects greater than 2.5 mm (ex. tool).		Dust tight.
4		Protected against solid objects greater than 1.0 mm (ex. wire).		

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

2nd Digit	Against Water	2nd Digit	Against Water
0	 <p data-bbox="466 443 651 472">Not protected.</p>	5	 <p data-bbox="1177 427 1402 488">Protected against jetting water.</p>
1	 <p data-bbox="466 696 691 792">Protected against vertically dripping water.</p>	6	 <p data-bbox="1177 696 1402 792">Protected against powerfully jetting water.</p>
2	 <p data-bbox="466 987 724 1084">Protected against dripping water when tilted up to 15°.</p>	6K	 <p data-bbox="1177 969 1469 1099">Protected against powerfully jetting water with increased pressure (Automotive).</p>
3	 <p data-bbox="466 1274 746 1370">Protected against spraying water (up to 60° inclination).</p>	7	 <p data-bbox="1177 1256 1453 1386">Protected against the temporary effects of immersion up to 1 meter.</p>
4	 <p data-bbox="466 1579 687 1639">Protected against splashing water.</p>	8	 <p data-bbox="1177 1529 1469 1688">Protected against continuous submersion agreed with customer, but more severe than code 7.</p>
4K	 <p data-bbox="466 1848 724 1944">Protected against splashing water with increased pressure.</p>	9K	 <p data-bbox="1177 1834 1410 1964">Protected against high-pressure/steam-jet cleaning (Automotive).</p>

AMP+ Charging Inlets Generation 2

Current and Voltage Performance Overview

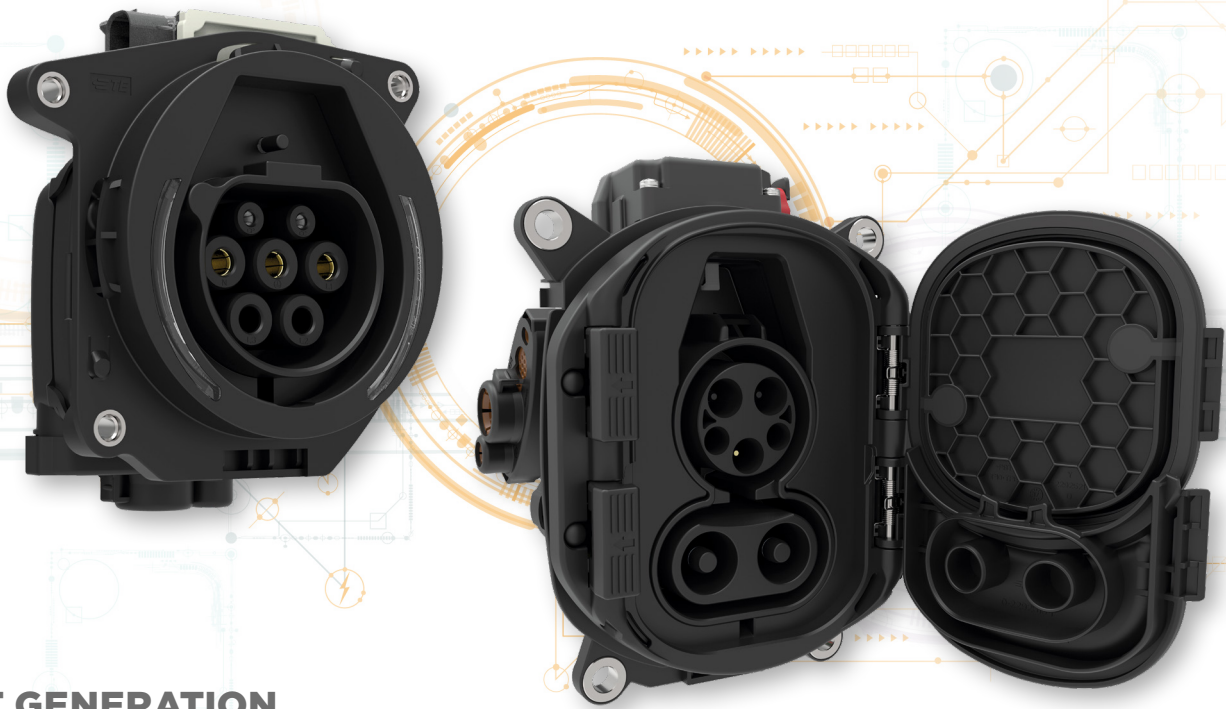


	Type 1 CCS *)	Type 2 CCS *)	Type 1	Type 2	Type GB AC
Applicable Standard	IEC 62196-3	IEC 62196-3	SAE J1772 (IEC 62196-2)	IEC 62196-2	GB/T 20234.2
Max. Rated Current					
AC Path	32 A	32 A	32 A	32 A	32 A
DC Path	200 A	200 A	-	-	-
Max. Rated Voltage					
AC Path	250 V	480 V / 250 V	250 V	480 V / 250 V	440 V / 250 V
DC Path	600 V	1,000 V	-	-	-

*) Combined Charging System (CCS)

Ingress Protection (IP) Performance

Inlet Type	Standard Applied	Ingress Protection (IP) Mated		Ingress Protection (IP) Unmated		Ingress Protection (IP) Backside	
		Required by Standard	TE Connectivity	Required by Standard	TE Connectivity	Required by Standard	TE Connectivity
Type 1 CCS	IEC 62196-3	IP44	IP44	IP54	To be ensured by OEM	-	IP67
Type 2 CCS	IEC 62196-3	IP44	IP44	IP54	To be ensured by OEM	-	IP67
Type 1 AC	SAE J1772 (IEC 62196-2)	IP44	IP44	IP54	To be ensured by OEM	-	IP67
Type 2 AC	IEC 62196-2	IP44	IP44	IP54	To be ensured by OEM	-	IP67
Type GB AC	GB/T 20234.2	IP44	IP44	IP54	To be ensured by OEM	-	IP67



NEXT GENERATION AMP+ CHARGING INLETS

AMP+ charging inlets are ready to meet the challenges of today's and tomorrow's hybrid and electric vehicles. They enable smarter, faster and safe charging for vehicles across all regions.

Our extended AMP+ charging inlets portfolio includes AC, DC and CCS (Combined Charging System) inlets for the European, North American and Japanese as well as Chinese markets.

Designed for increased performance demands they are scalable to fit all electrical/electronic architectures inside the vehicle, from discrete point-to-point operation, or via distributed intelligent control.



Technical Features

Poles:
5

Terminal Size / System:
Round contact

AC Contacts:
6 mm²

DC Contacts:
50 mm²

Voltage Rating AC:
250 VAC

Voltage Rating DC:
600 VDC

Temperature Range:
-30°C to +50°C

Current Carrying Capability:
32 A

IP Rating, Mated:
IP44
Cable outlet backside IP67

Cable Outlet:
90° and 180°

Finger Protection:
Yes

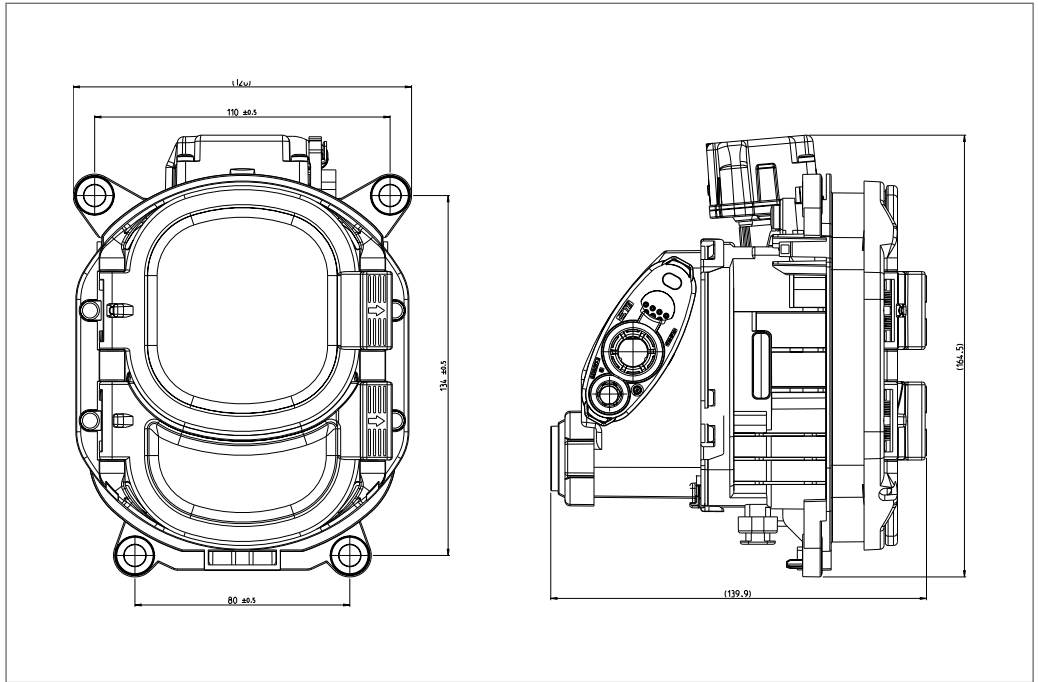
Vibration Level:
SG 2 (LV 215-1)

Application Specification:
114-94648 (90°)
114-94649 (180°)

Product Specification:
108-94777

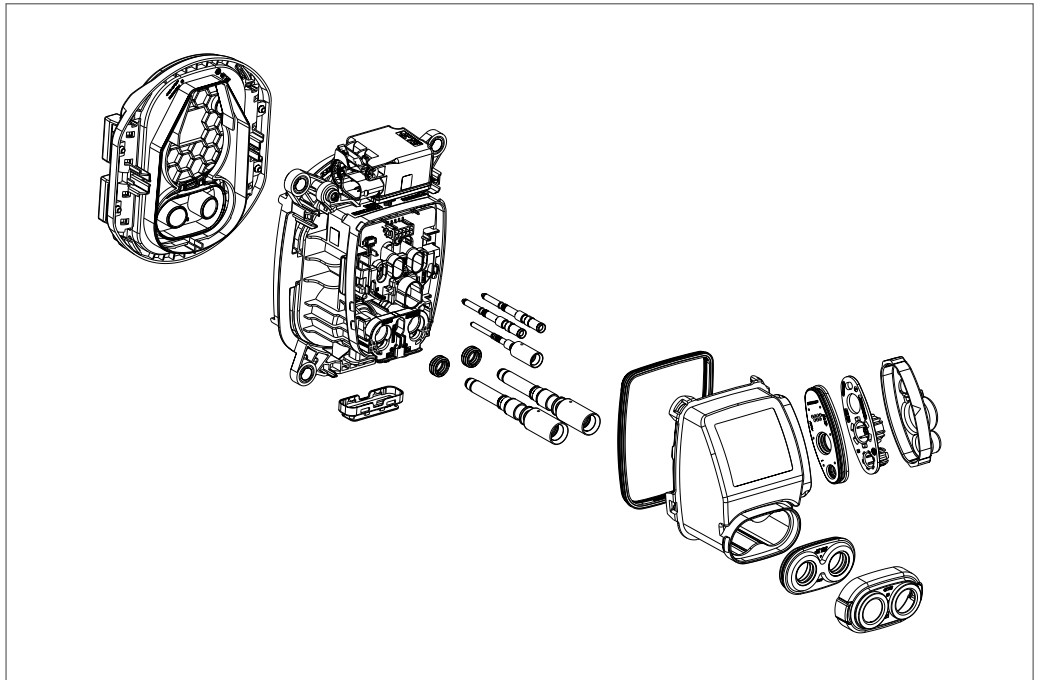
For documentation and more information online visit:
[AMP+ Charging Inlets, Type 1, AC & CCS](#)

AMP+ Charging Inlet, Type 1, Combined Charging System (CCS 1)



Drawing 2337006 *

Drawing includes all required parts to order a complete charging inlet.



* Drawing Number is NOT the Order Number!



Technical Features

Poles:

5 / 7

Terminal Size / System:

Round contact

AC Contacts:
6 mm²
DC Contacts:
50 mm²
Voltage Rating AC:

up to 480 VAC

Voltage Rating DC:

up to 1,000 VDC

Temperature Range:

-30°C to +50°C

Current Carrying Capability:

32 A

IP Rating, Mated:

IP44

Cable outlet backside IP67

Cable Outlet:

90° and 180°

Finger Protection:

Yes

Vibration Level:

SG 2 (LV 215-1)

Application Specification:

114-94650 (90°)

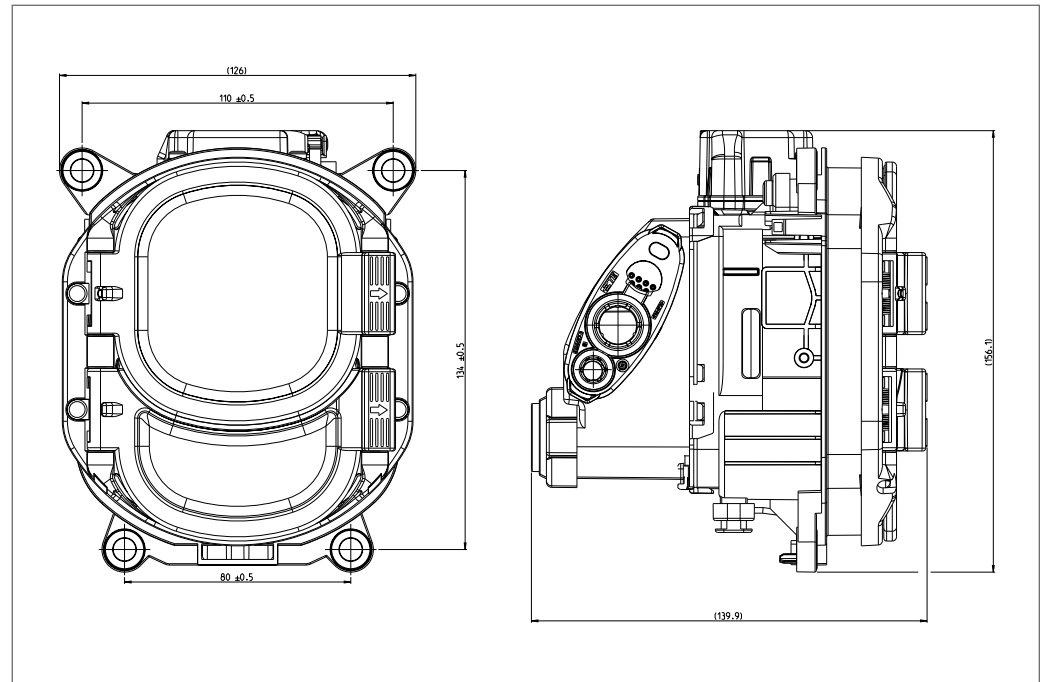
114-94651 (180°)

Product Specification:

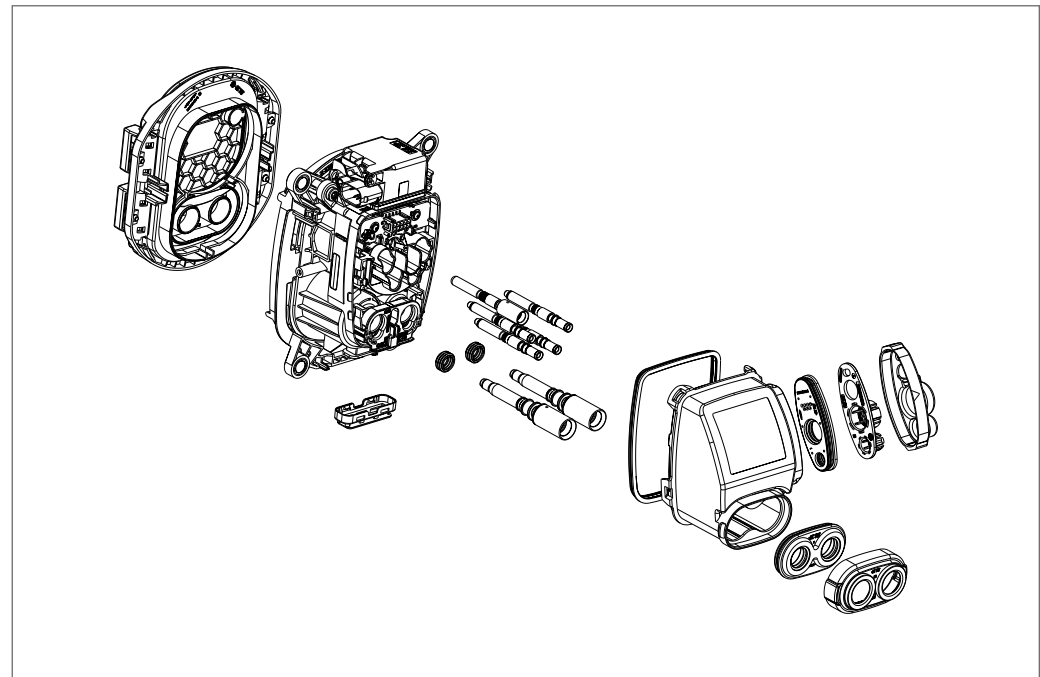
108-94778

For documentation and more information online visit:
[AMP+ Charging Inlets, Type 2, AC & CCS](#)

AMP+ Charging Inlet, Type 2, Combined Charging System (CCS 2)

Drawing [2337016](#) *

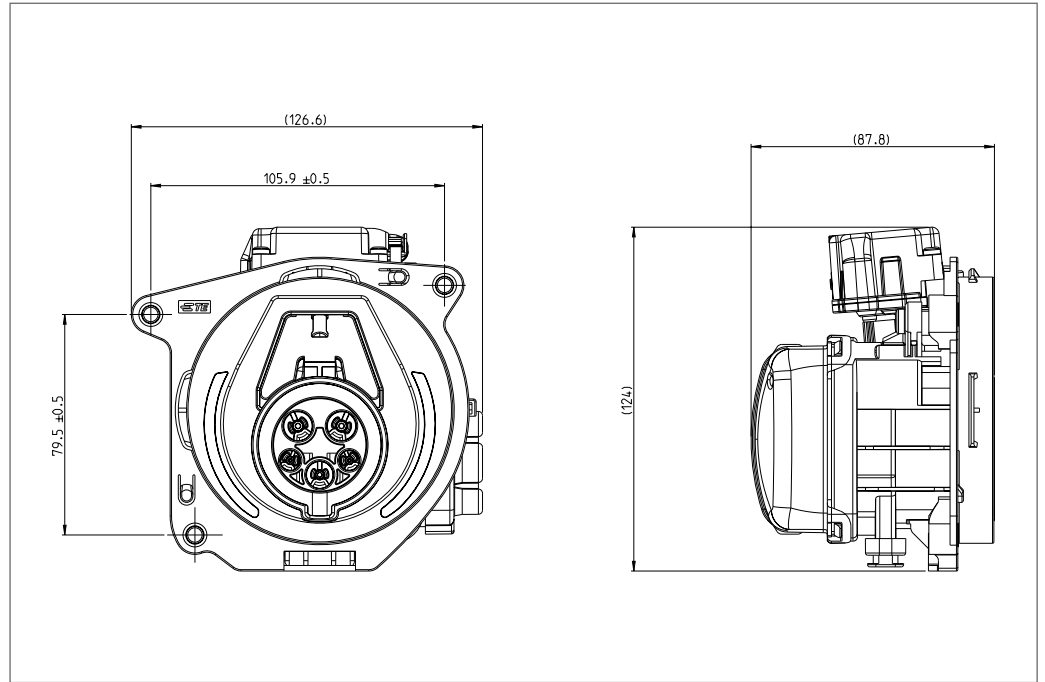
Drawing includes all required parts to order a complete charging inlet.



* Drawing Number is NOT the Order Number!



AMP+ Charging Inlet, Type 1, AC



Drawing [2368475](#) *

Drawing includes all required parts to order a complete charging inlet.

Technical Features

Poles:

5

Terminal Size / System:

Round contact

Conductor Cross-Sections:

0.75 to 1.00 mm² / 4.00 mm² / 6.00 mm²

Voltage Rating:

250 VDC

Temperature Range:

-30°C to +50°C

Current Carrying Capability:

32A

IP Rating, Mated:

IP44

Cable outlet backside IP67

Cable Outlet:

90° (can be rotated)

Finger Protection:

Yes

Vibration Level:

SG 2 (LV 215-1)

Application Specification:

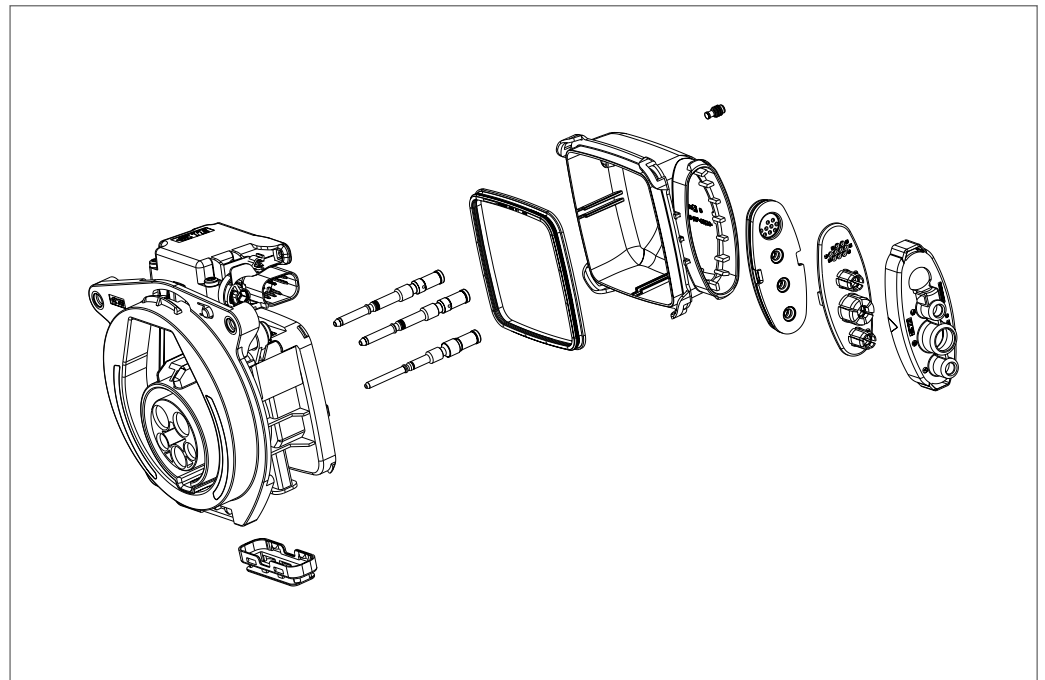
114-94652

Product Specification:

108-94779

For documentation and more information online visit:

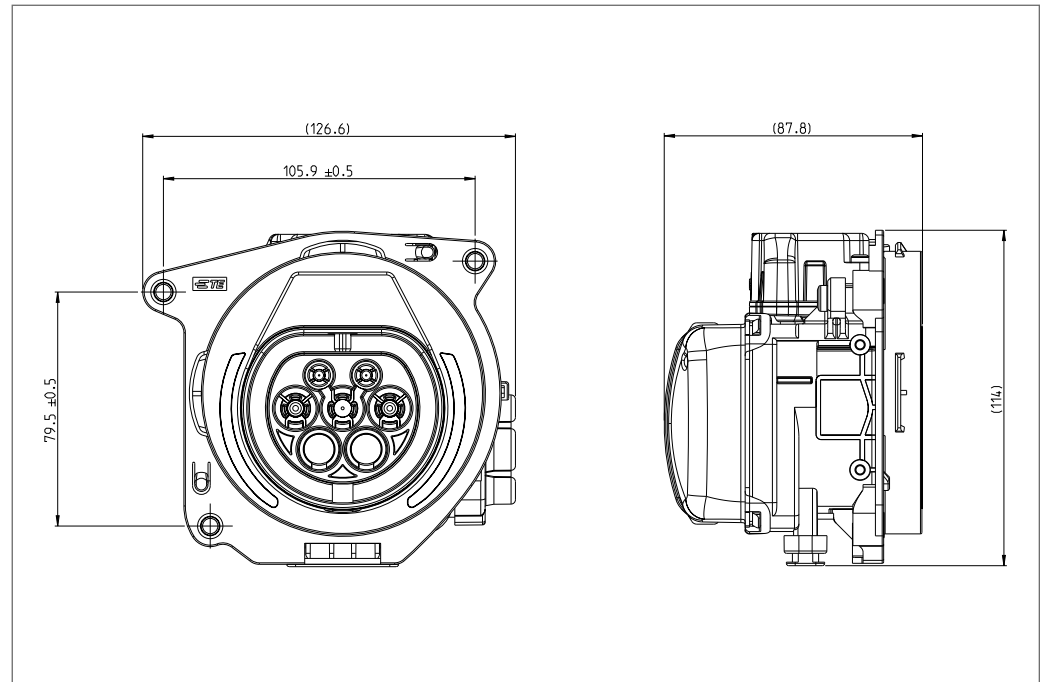
[AMP+ Charging Inlets, Type 1, AC & CCS](#)



* Drawing Number is NOT the Order Number!



AMP+ Charging Inlet, Type 2, AC



Drawing [2368472](#) *

Drawing includes all required parts to order a complete charging inlet.

Technical Features

Poles:

5 / 7

Terminal Size / System:

Round contact

Conductor Cross-Sections:

0.75 to 1.00 mm² / 4.00 mm² / 6.00 mm²

Voltage Rating:

up to 480 VDC

Temperature Range:

-30°C to +50°C

Current Carrying Capability:

32A

IP Rating, Mated:

IP44

Cable outlet backside IP67

Cable Outlet:

90° left, right and downwards

Finger Protection:

Yes

Vibration Level:

SG 2 (LV 215-1)

Application Specification:

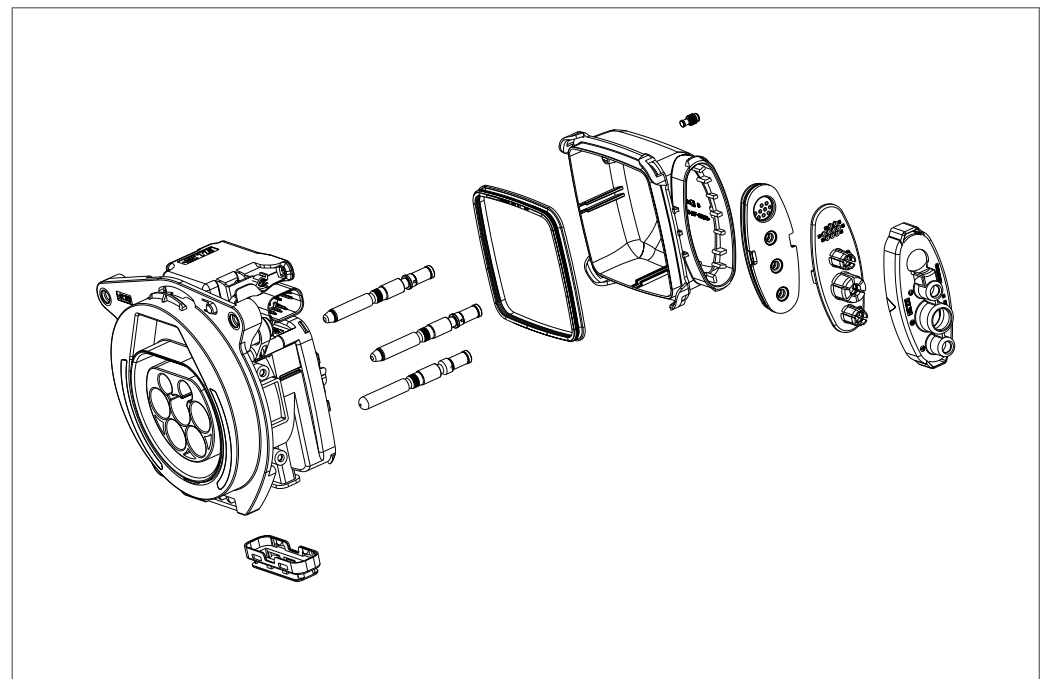
114-94653

Product Specification:

108-94780

For documentation and more information online visit:

[AMP+ Charging Inlets, Type 2, AC & CCS](#)



* Drawing Number is NOT the Order Number!



Technical Features

Poles:

5

Terminal Size / System:

Round contact

Conductor Cross-Sections:

0.75 to 1.00 mm² / 4.00 mm² / 6.00 mm²

Voltage Rating:

250 VDC

Temperature Range:

-30°C to +50°C

Current Carrying Capability:

32A

IP Rating, Mated:

IP44

Cable outlet backside IP67

Cable Outlet:

90° (can be rotated)

Finger Protection:

Yes

Vibration Level:

SG 2 (LV 215-1)

Application Specification:

114-94654

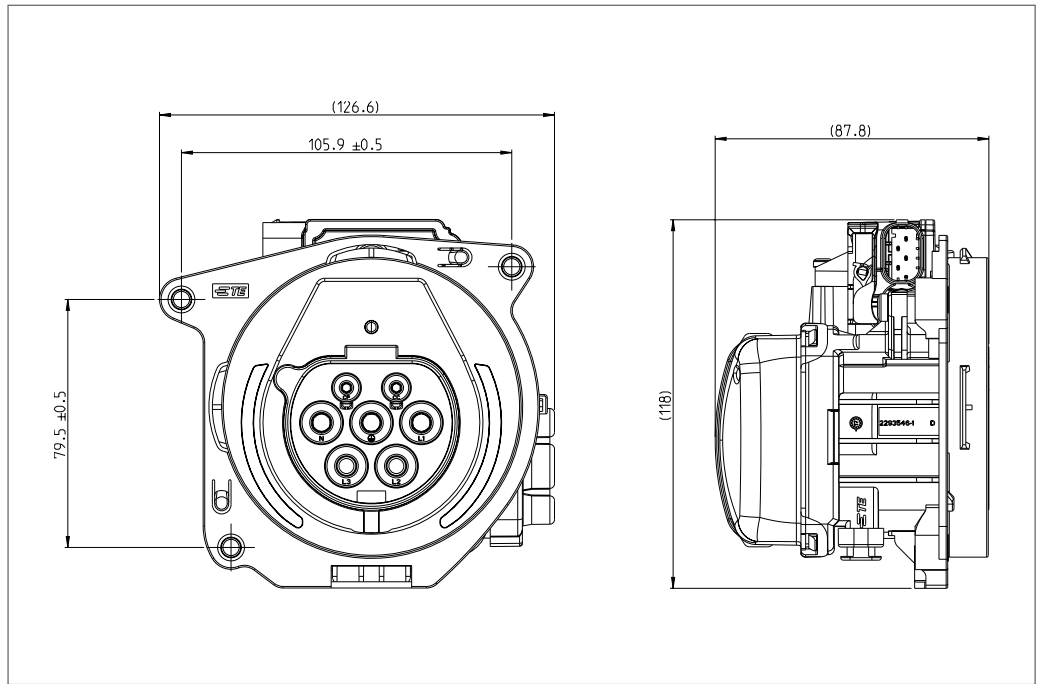
Product Specification:

108-94781

For documentation and more information online visit:

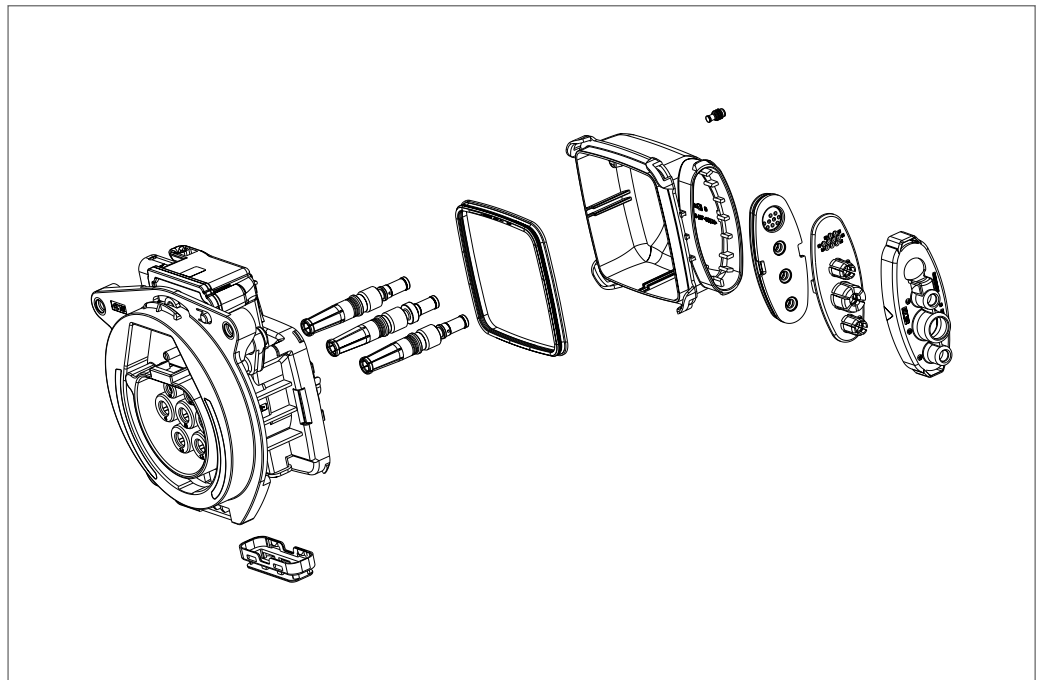
[AMP+ Charging Inlets, Type GB, AC](#)

AMP+ Charging Inlet, Type GB, AC



Drawing [2368478](#) *

Drawing includes all required parts to order a complete charging inlet.



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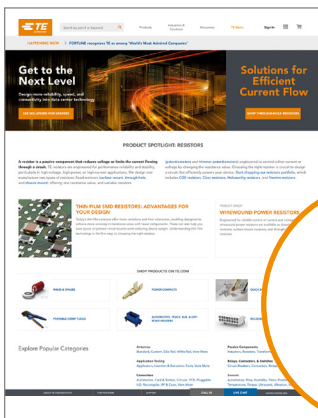
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HYBRID & ELECTRIC MOBILITY APPLICATION

Learn more about TE Connectivity's hybrid and electric mobility solutions and applications under:

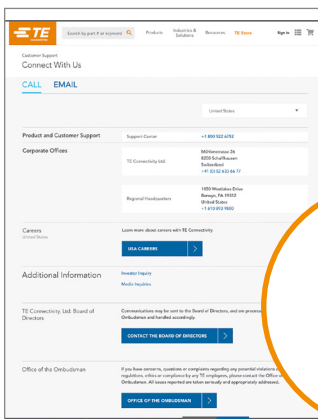
www.te.com/hybrid-electric-mobility



PRODUCT INFORMATION

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

www.TE.com



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EUROPE

Germany

Product Information Center:
Phone: +800 0440-5100
Fax: +49 6251-133-1988

UNITED STATES

United States - Harrisburg

Product Information Center:
Phone: +1 800-522-6752
Fax: +1 717-986-7575

SOUTH AMERICA

South America

Phone: +54 11-4733-2015
Fax: +54 11-4733-2083

AFRICASouth Africa -
Port Elizabeth

Phone: +27 41-503-4500
Fax: +27 41-581-0440

ASIA/PACIFIC

Australia - Sydney

Product Information Center:
Phone: +61 2-9840-8200
Fax: +61 2-9634-6188

People's Republic of China

Hong Kong
Phone: +852 2738-8731
Fax: +852 2735-0243

People's Republic of China

Shanghai
Phone: +86 21-3398-0000
Fax: +86 21-3398-1999

Korea - Seoul

Phone: +82 2-3415-4500
Fax: +82 2-3486-3810

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TE Connectivity Germany GmbH

Ampèrestrasse 12-14
64625 Bensheim
Germany

