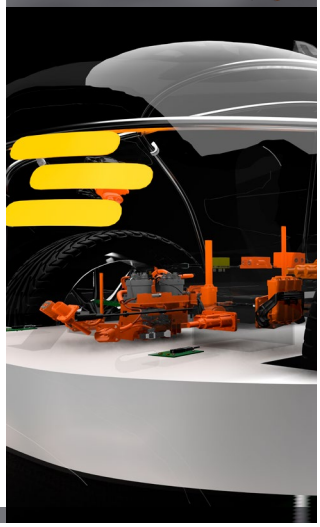


Hybrid & Electric
Mobility Solutions

Product Overview

PUT THE POWER ON THE ROAD

TE Connectivity (TE) provides a complete line of connectors, relays, harnesses, contactors and disconnects to safely connect and protect the flow of data and power around your hybrid or electric vehicle.

TE's automotive products have been proven in light and heavy-duty vehicles and our technologies leverage decades of experience with high-voltage generation, transmission and distribution. So you can depend on them to be safe and reliable in your application.

BATTERY TECHNOLOGIES

Protecting by design. Connection after connection. TE's innovative cell-to-cell, module-to-module, and battery-to-car solutions are addressing the big challenges of hybrid and electric vehicles.

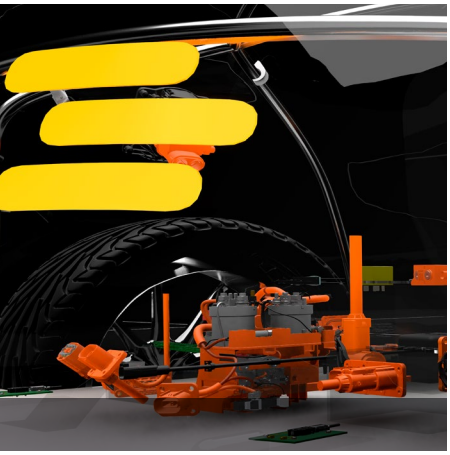
With continuous research into new technologies, collaborative engineering with customers, and lower-mass off-the-shelf solutions, we're making a difference with your power-to-weight-ratio, time-to-recharge, and total range capabilities.

Our technologies leverage decades of experience with high-voltage generation, transmission and distribution and you can depend on them to be safe and reliable in your application.

CHARGING SOLUTIONS

Mobility simplified. One charge at a time. TE is helping enable electric mobility by creating safe, high-quality components for every part of the charging station – and making them affordable. Our experience with high-voltage energy distribution and Smart-Grid technology gives us insight into the needs of this important market segment. More than a complete charging solution.

A smart one. Smart charging solutions enable customers to meter their EV's electricity consumption, and communicate data via innovative smart charging cords and inlets. You supply the shell, we'll supply everything else. TE has everything it takes to create your charging solution, except the box it goes in. From cables to contactors, meters to card readers, screens to sockets, we've already solved how it all goes together.



IN-VEHICLE TECHNOLOGY

TE provides a complete line of connectors, relays, harnesses, contactors and disconnects to safely connect and protect the flow of data and power around your hybrid or electric vehicle. TE‘s automotive products have been proven in light and heavy-duty vehicles and our technologies leverage decades of experience with high-voltage generation, transmission and distribution.

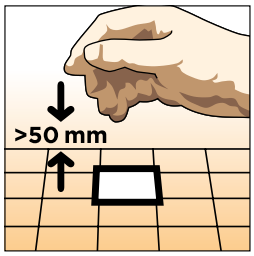
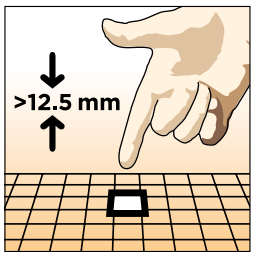
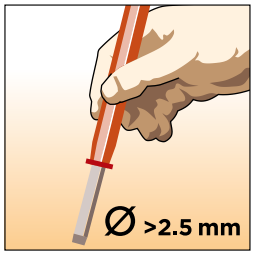
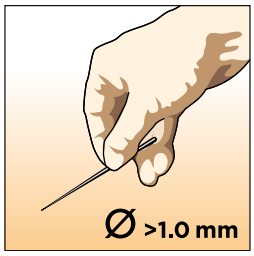
So you can depend on them to be safe and reliable in your application. Our AMP+ line of cables, connectors, harnesses and terminals safely and reliably channel high- and low-voltage power in and around the battery and vehicle, to help you put the power to the road.

INFRASTRUCTURE SOLUTIONS

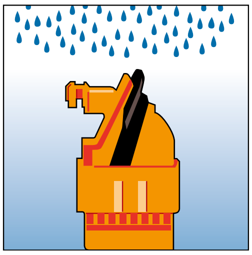
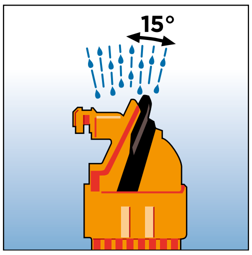
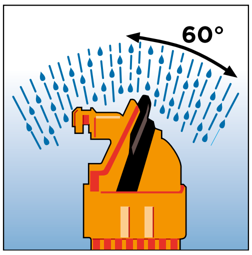
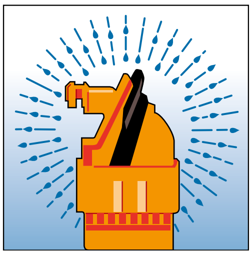
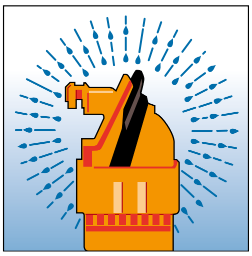
Completing the connections that power it all. More than 50 years of experience with high-voltage electricity separates us from automotive engineering companies in the hybrid and EV industry.

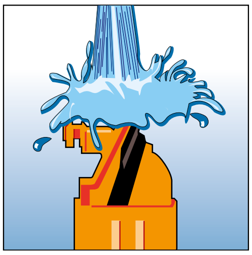
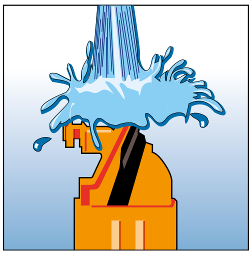
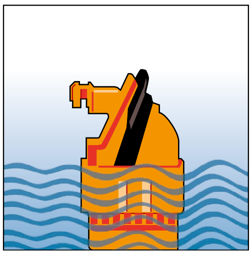
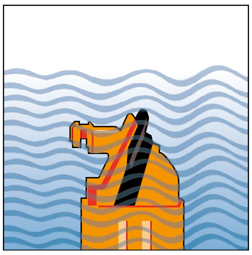
We’re using that knowledge to help create smarter, better, easier ways to connect the grid to drivers – and give them the mobility they need. Before everyone can embrace driving hybrid and electric vehicles, we need a safe, reliable way to get the power from the grid to the chargers, and into the batteries.

TE’s broad array of energy and industrial technologies have seen decades of real-world use connecting and protecting the flow of power around the world. So you can depend on them to be safe and reliable in your application, too.

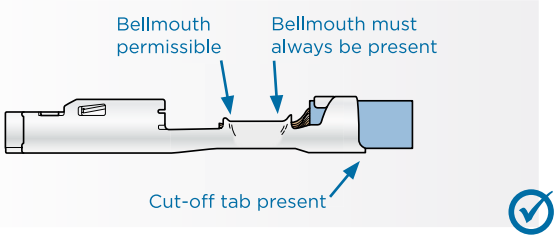
1st Digit	Against Foreign Objects (incl. Dust)	
0		Not protected.
1		Protected against solid objects greater than 50 mm (ex. back of hand).
2		Protected against solid objects greater than 12.5 mm (ex. finger).
3		Protected against solid objects greater than 2.5 mm (ex. tool).
4		Protected against solid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

1st Digit	Against Foreign Objects (incl. Dust)	
5K		Dust protected.
6K		Dust tight.

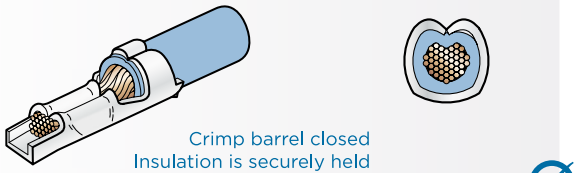
2nd Digit		Against Water
0		Not protected.
1		Protected against vertically dripping water.
2		Protected against dripping water when tilted up to 15°.
3		Protected against spraying water (up to 60° inclination).
4		Protected against splashing water.
4K		Protected against splashing water with increased pressure.

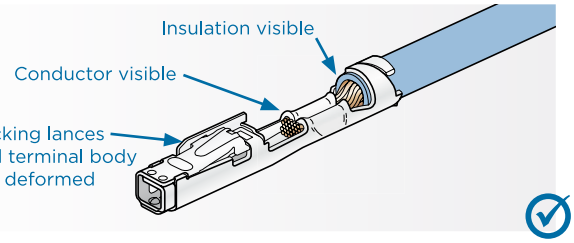
2nd Digit		Against Water
5		Protected against jetting water.
6		Protected against powerfully jetting water.
6K		Protected against powerfully jetting water with increased pressure (Automotive).
7		Protected against the temporary effects of immersion up to 1 meter.
8		Protected against continuous submersion agreed with customer, but more severe than code 7.
9K		Protected against high-pressure/ steam-jet cleaning (Automotive).

Good Crimp Quality

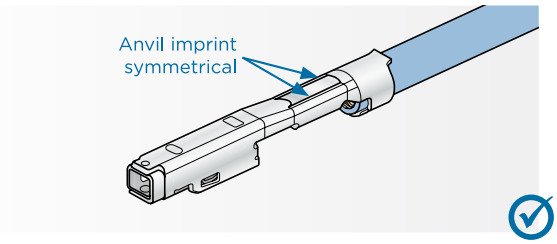


F-CRIMP





OVERLAP CRIMP



WRAP OVER CRIMP

Correct selection

of wire, terminal and applicator
Crimp barrel is closed, legs support each other, sufficient gap between legs and bottom of crimp, all strands are equally distributed and deformed

Test

WIRE CRIMP

Crimp heights and tolerances

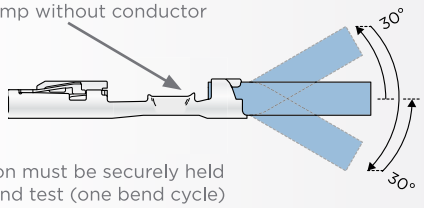
For crimp height tolerances for any given contact, please refer to the relevant application specification.

Examples

Contact	P/N	Wire Range	Tolerance	Spec.
JJPT	927775	0.50 – 1.00 mm²	±0.05 mm	114-18050
JPT	927773	1.50 – 2.50 mm²	±0.05 mm	114-18050
MQS	962885	0.20 – 0.50 mm²	±0.03 mm	114-18025

INSULATION CRIMP

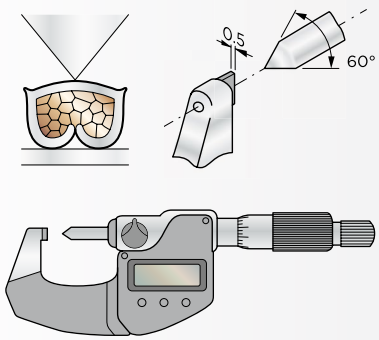
Wire crimp without conductor



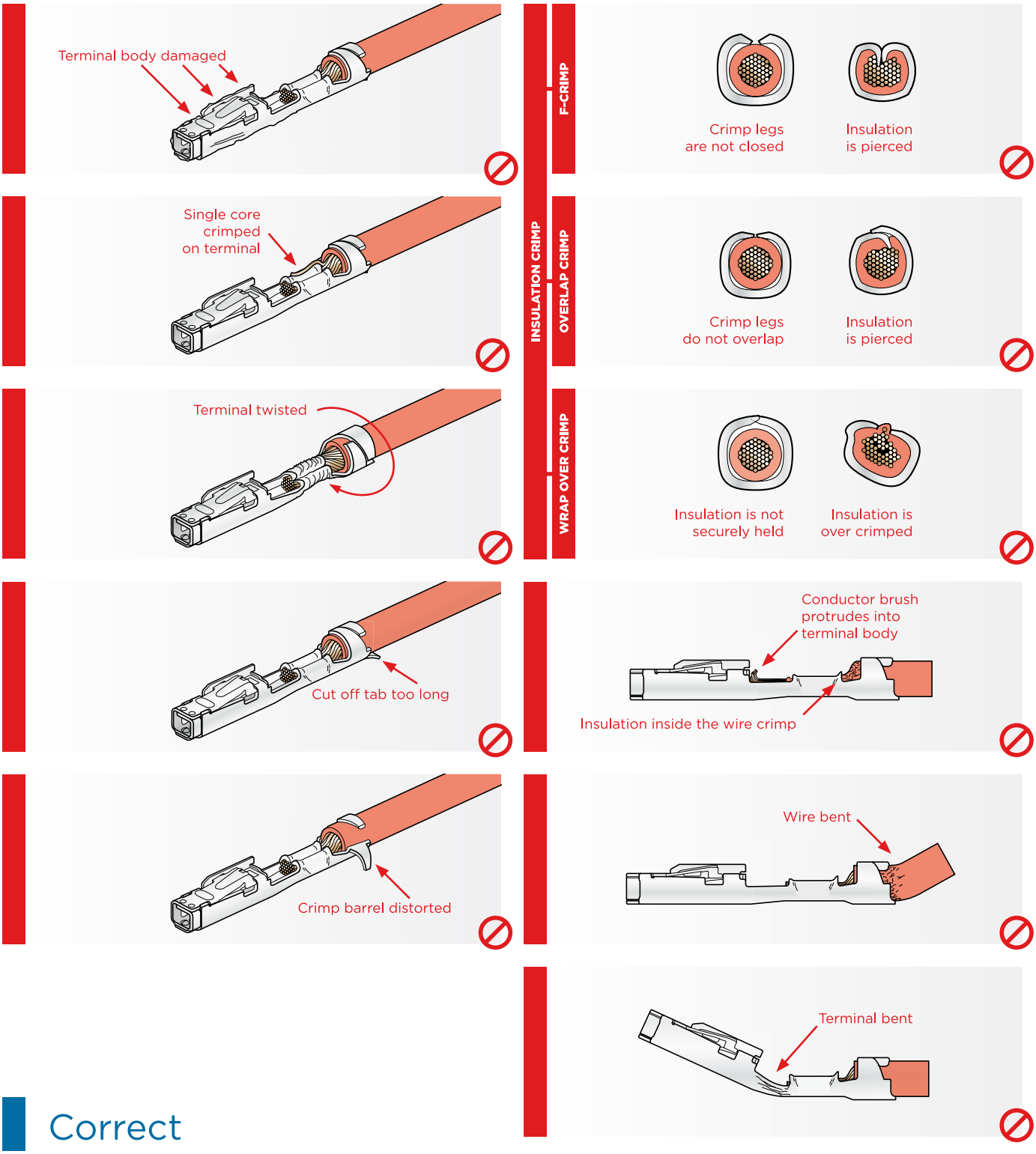
Insulation must be securely held after bend test (one bend cycle)

WIRE CRIMP

Digital crimp height micrometer
(0.001 mm increments) according to DIN ISO 9001
Part number: 547203-1



Incorrect Crimp Quality



Correct

Incorrect

Test

At TE Connectivity, we support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials. Part numbers in this catalog are identified as:

RoHS Compliant

Part numbers in this catalog are RoHS Compliant, unless marked otherwise. These products comply with European Union Directive 2002/95/EC as amended 1 January 2006 that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

Note: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

Non-RoHS Compliant

These part numbers are identified with a "t" symbol. These products do not comply with the material restrictions of the European Union Directive 2002/95/EC.

5 of 6 Compliant

A "l" symbol identifies these part numbers. These products do not fully comply with the European Union Directive 2002/95/EC because they contain lead in solderable interfaces (they do not contain any of the other five restricted substances above allowable limits). However, these products may be suitable for use in RoHS applications where there is an application-based exception for lead in solders, such as the server, storage, or networking infrastructure exemption.

Note: Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced below. So whatever your questions when it comes to RoHS, we've got the answers at http://www.TE.com/customersupport/rohssupportcenter/

Getting the information you need

Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog: www.TE.com/commerce/alt/RohsAltHome.do
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above

AWG Code	Diameter (Inch)	Diameter (mm)	F (mm²)
000000	0.5800	14.733	170.0
00000	0.5165	13.13	135.0
0000	0.4600	11.684	103.8
000	0.4096	10.40	79.0
00	0.3648	9.27	67.5
0	0.3249	8.25	53.4
1	0.2893	7.34	42.2
2	0.2576	6.55	33.7
3	0.2294	5.82	26.6
4	0.2043	5.18	21.0
5	0.1819	4.62	16.9
6	0.1620	4.115	13.25
7	0.1443	3.66	10.25
8	0.1285	3.26	8.34
9	0.1144	2.90	6.6
10	0.1019	2.59	5.27
11	0.0907	2.30	4.15
12	0.0808	2.05	3.3
13	0.0720	1.83	2.63
14	0.0641	1.63	2.08
15	0.0571	1.45	1.65
16	0.0508	1.29	1.305
17	0.0453	1.14	1.01
18	0.0403	1.02	0.79
19	0.0359	0.91	0.65
20	0.0320	0.81	0.51
21	0.0285	0.72	0.407
22	0.0253	0.64	0.32
23	0.0226	0.57	0.255
24	0.0201	00.51	0.205
25	0.0179	0.455	0.162
26	0.0159	0.40	0.125
27	0.0142	0.36	0.102
28	0.0126	00.320	0.08
29	0.0113	00.287	0.0646
30	0.0100	00.254	0.0516
31	0.0089	00.226	0.04
32	0.0080	00.203	0.0324
33	0.0071	00.180	0.0255
34	0.0063	00.160	0.02
35	0.0056	00.142	0.0158
36	0.0050	00.127	0.0127
37	0.0045	00.114	0.01
38	0.0040	00.101	0.008
39	0.0035	00.089	0.0062
40	0.0031	00.079	0.0049
41	0.0028	00.071	0.00395
42	0.0025	00.064	0.00321
43	0.0022	00.056	0.00246
44	0.00198	00.050	0.00196
45	0.00176	00.045	
46	0.00157	00.040	
47	0.00140	00.036	
48	0.00124	00.031	
49	0.00110	00.028	
50	0.00099	00.025	

Remark: Starting from 0.03 mm2 (AWG 32) a wire can be crimped.

Most of the wire size ranges are mentioned in mm², as well as the insulation diameters which are in many cases only in mm's We therefore included the con-version tables on page X and page XI.

Please note that wire and insulation sizes are for guidance only. Consult the customer drawing for precise detail.

FLK and FLR

stand for German DIN (72551) abbreviations.

FLK means:

In German:

- Fahrzeug-Leitung Kunststoff

In English:

- Vehicle Cable Plastic

FLR means:

In German:

- Fahrzeug-Leitung reduziert

In English:

- Thin Walled Cable (reduced insulation thickness)

Catalog 1654294-4
Publishxed xx-2017

Hybrid & Electric Mobility Solutions
Product Overview

Hybrid & Electric Mobility Solutions

Product Overview

Catalog 1654294-4
Published 04-2017

Hybrid & Electric Mobility Solutions
Product Overview

POWERTRAIN SYSTEMS

SAFETY & SECURITY SYSTEMS

CONVENIENCE

DRIVER INFORMATION

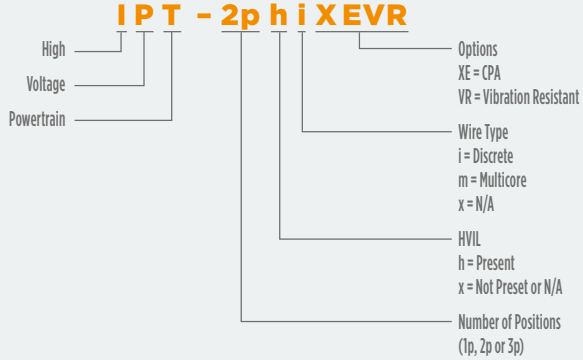
BODY & CHASSIS SYSTEMS

AMP+ IPT

INTRODUCTION

Connector for powertrain applications in high vibration environment, up to 300A (depending on wire cross section) at 105°. Used e.g. to connect inverter to e-machine and charging applications.

Naming Convention
IPT Connector Family



Technical Features

Pin Number:
1

Contact System:
IPT screwed

Conductor Cross-sections:
16-50 mm²

Voltage Range:
800-1000 VDC

Operation Temperature:
-40 °C to +140 °C

Current Carrying Capacity:
300A @ 105 °C (50 mm²)

IP Rating:
IP6k9k

HVIL:
no

CPA:
no

Fire Classification:
HB

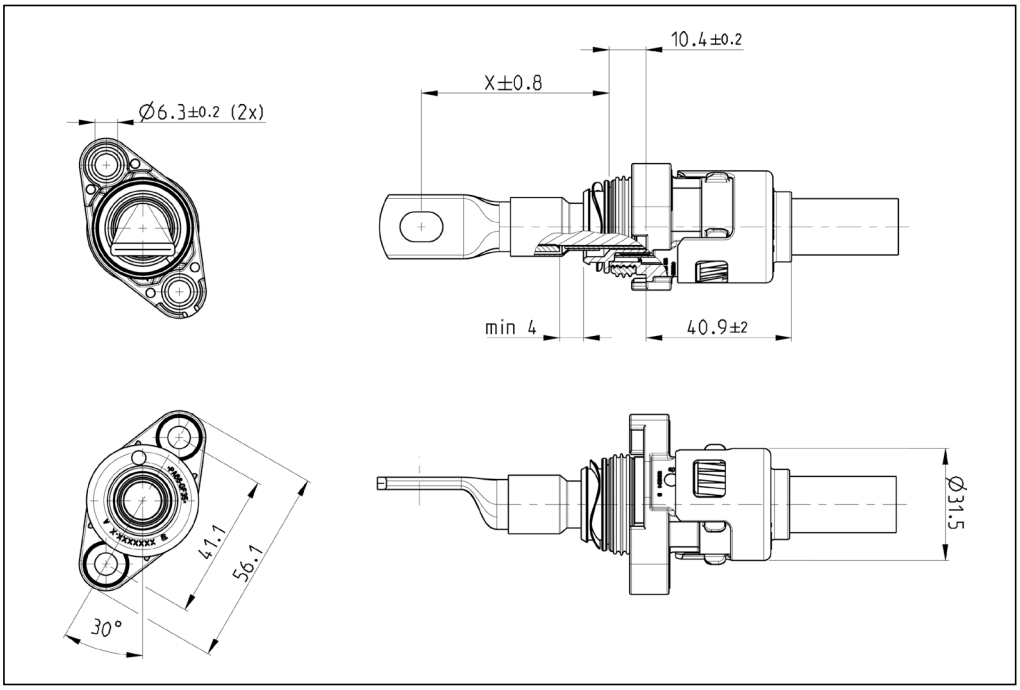
Vibration Level:
4

Application Specification:
114-94133

Product Specification:
108-94293

Interface Drawing:
114-94132-1

AMP IPT 1pxi



Drawing 114-94131-1 *

AMP IPT 1pxi

Version (Cable Dimension)		Coding	Order Information
25 / 35 / 50 mm² (acc. LV216-2)	released	A	To be Ordered see drawing!
		B	
		C	
		D	
		E	
		F	
16 mm²	in planning		

* Drawing Number is NOT the Order Number!

Technical Features

Pin Number:
2

Contact System:
IPT screwed

Conductor Cross-sections:
16-50 mm²

Voltage Range:
800-1000 VDC

Operation Temperature:
-40 °C to +140 °C

Current Carrying Capacity:
300A @ 105 °C (50 mm²)

IP Rating:
IP6k9k

HVIL:
no

CPA:
no

Fire Classification:
HB

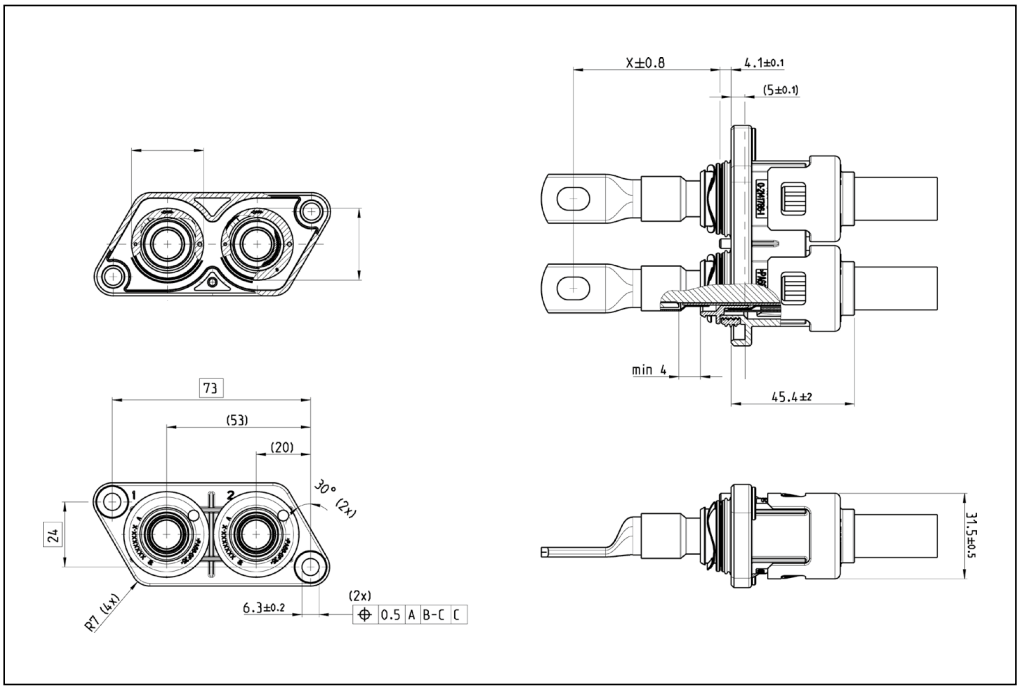
Vibration Level:
4

Application Specification:
114-94133

Product Specification:
108-94293

Interface Drawing:
114-94132-2

AMP IPT 2pxi



Drawing 114-94131-2 *

AMP IPT 2pxi

Version (Cable Dimension)		Coding	Order Information
25 / 35 / 50 mm²	released	A	To be Ordered see drawing!
16 mm²	in planning		

* Drawing Number is NOT the Order Number!

Technical Features

Pin Number:
3

Contact System:
IPT screwed

Conductor Cross-sections:
16-50 mm²

Voltage Range:
800-1000 VDC

Operation Temperature:
-40 °C to +140 °C

Current Carrying Capacity:
300A @ 105 °C (50 mm²)

IP Rating:
IP6k9k

HVIL:
no

CPA:
No

Fire Classification:
HB

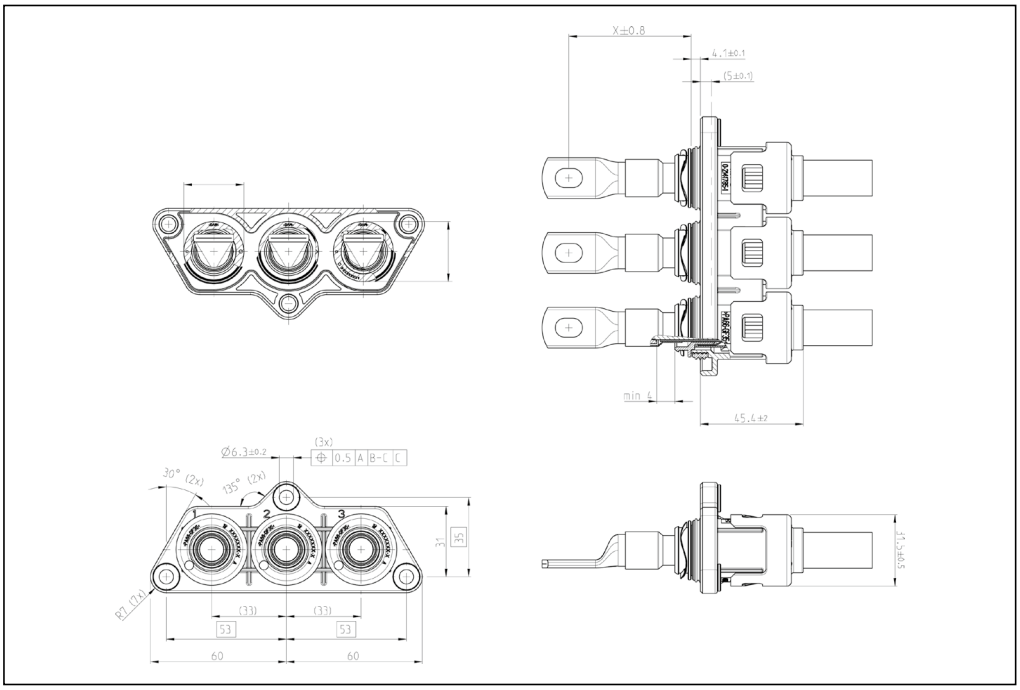
Vibration Level:
4

Application Specification:
114-94133

Product Specification:
108-94293

Interface Drawing:
114-94132-3

AMP IPT 3pxi



Drawing 114-94131-3 *

AMP IPT 3pxi

Version (Cable Dimension)		Coding	Order Information
25 / 35 / 50 mm²	released	A	To be Ordered see drawing!
16 mm²	in planning		

* Drawing Number is NOT the Order Number!

TE CONNECTIVITY ONLINE

TE.com 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 and knowledge and idea sharing.

COLLATERAL

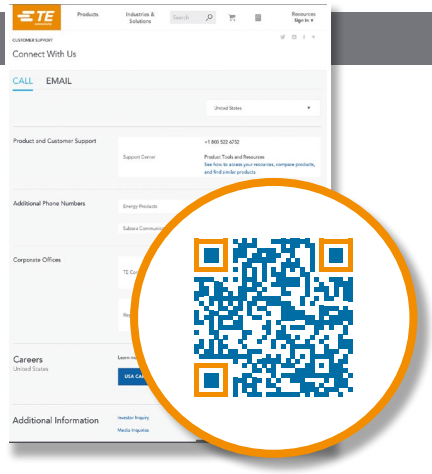
TE.com offers a variety of product-specific catalogs, brochures, white papers and other technical information. To download our literature visit

www.te.com/automotiveliterature.html

PRODUCT INFORMATION

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

www.TE.com



STAY CONNECTED

You can rely on TE's PIC Team to answer your general or technical questions. To contact a PIC representative, visit

www.TE.com/support-center

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(toll-free)

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Fax: +86 21-3398-1999

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

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TE expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. The dimensions in this catalog are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult TE for the latest dimensions and design specifications.

TRADEMARKS

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