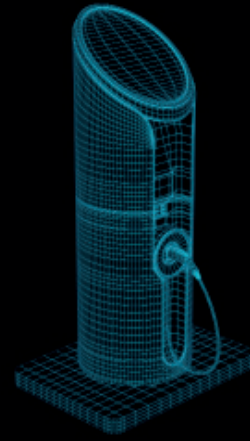
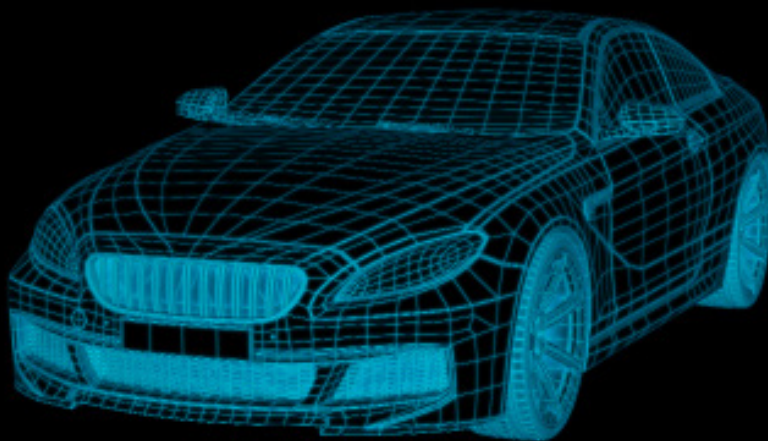




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E-Mobility Product Guide





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The Specialist in Electronic Component Distribution

Why Choose TTI?

Why Buy from TTI?

Founded in 1971, TTI has steadily grown to become a world leading specialist distributor of electronic components. The company was founded on the premise that passive component purchasing could be made more efficient by offering product specialisation, customer-driven service and proprietary supply chain solutions.

Product Knowledgeable Experts

Our unique specialisation enables us to provide significantly better product knowledge to support manufacturing from design chain to supply chain. TTI's commitment to this specialty and our customers is as dedicated today as always.

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TTI maintains extensive inventories, stocking more than 2M part numbers globally – that's more connector, passive, electromechanical, discrete, sensor and power supply inventory available than from any other source.

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Our European headquarters is located just outside of Munich, Germany in Maisach-Gernlinden. In total, we have more than 35,000m² of dedicated warehouse space and local sales and technical support in over 40 locations across Europe.

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TTI is the first distributor to have all global warehouse locations ISO registered and certified to ISO 9001 and ISO 14001 Standards. TTI Europe is also certified to EN9120/EN9100, IECQ-CECC and ISO/IEC 27001 Standards. Additionally, all of our European sales branches are ISO 9001 certified. TTI has one global documentation system that ensures that every TTI branch and warehouse in the world follows the same processes.

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warehousing in North
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and Asia.





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Amphenol[®]

• **A P T I V** •



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AUTHORIZED DISTRIBUTOR

High Voltage Connection Systems

Amphenol

Amphenol®




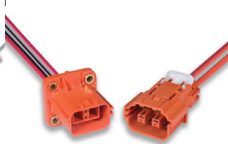
Product Series	Epower Lite	Radlok	Surlok Plus	UPC	HVSL
					
Applications	Auxiliary Systems			High Power	
Voltage	Up to 1000V	Up to 1000V	Up to 1000V	Up to 1000V	800V or 1000V
Temperature rating	From -40°C to +125°C	From -40°C to +125°C	From -40°C to +125°C	From -40°C to +125°C	From -40°C to +125°C
Contact size	3.6mm	3.6mm / 5.7mm / 8mm / 10mm / 12mm / 14mm	5.7mm / 8mm / 10.3mm	9.1mm	800V: 2.8mm – 6mm 1000V: 6, 8 and 10mm
Operating current at 80°C	Up to 80AMP	Up to 500AMP	Up to 300AMP	Up to 250AMP	800V: up to 46AMP 1000V: up to 250AMP
Secondary locking	Yes	Yes	No	No	Yes & No
HVIL	Yes	No	No	Yes	Yes
Sealing	IP67 / IP69K	IP40	IP67 / IP69K	IP67 / IP69K	IP67 / IP69K
Shielding	Yes	No	No	Yes	Yes
Wire size	2.5mm ² – 10mm ²	10mm ² – 150mm ²	16mm ² – 95mm ²	35mm ² – 70mm ²	800V: 2.5mm ² – 6mm ² 1000V: 16mm ² – 70mm ²
Overmolding	No	Yes	No	No	No
Material	Plastic	Plastic	Plastic	Plastic	Plastic & Metal
Touch proof (IP2X)	Yes	No	Yes	Yes	Yes





Product series	HVBI	HVSLS	Powerlok	Mini-MSD, MSD, MSD-XL	HVPT
					
Applications	High Power				Motors and Drives
Voltage	Up to 1000V	Up to 1000V	Up to 1000V	Mini-MSD & MSD-XL – up to 1500V MSD – up to 1000V	Up to 1000V
Temperature rating	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C
Contact size	6mm, 8mm, 10mm	6mm	4mm – 14mm	N/A	N/A
Operating current	Up to 200AMP	Up to 110AMP	Up to 500AMP	Mini-MSD – up to 400A MSD & MSD-XL – up to 630A	N/A
Secondary locking	No	No	Yes	Yes	N/A
HVIL	Yes	Yes	Yes	Yes	N/A
Sealing	IP67 / IP69K	IP67 / IP69K	IP67 / IP69K	IP67 / IP69K	IP67 / IP69K
Shielding	Yes	Yes	Yes	No	Yes
Wire size	16mm ² – 70mm ²	16mm ² – 25mm ²	2.5mm ² – 150mm ²	N/A	5mm ² – 70mm ²
Overmolding	No	No	Yes	No	No
Material	Metal	Metal	Metal	Plastic	Plastic
Touch proof (IP2X)	Yes	Yes	Yes	Yes	Yes

High Voltage Connection Systems

Aptiv

• APTIV •

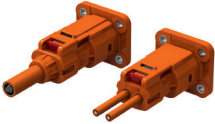



Product Series	48V Connectors	Powerpack 1000	AK Class 1 Shield-Pack™ HV280	Apex® HV280	Shield-Pack™ HV280
					
Applications	Auxiliary Systems				
Voltage	48V	48V	1000V DC	1000V DC	1000V DC
Temperature rating	-40°C to 140°C	-40°C to +125°C	-40 °C to +140°C	-40°C to +125°C	-40°C to +125°C
Contact size	M6 & M8 studs	10.5	2.8mm	2.8mm	2.8mm
Operating current	200A at 140°C	145A at 85°C	30A at 85°C	35A at 70°C	40A at 85°C
Secondary locking	No	Yes	Yes	Yes	Yes
HVIL	No	No	Yes	Yes	Yes
Sealing	IP67, ID6K9K	IP67, IP6K9K	IP67, IP6K9K	IP67, IPX9K	IP67, IPX9K
Shielding	No	No	Yes / Multicore Cable	Yes / With braid	Yes
Wire size	16mm ² – 50mm ²	8mm ² – 25mm ²	2.5mm ² & 4mm ² multi-core circuit; 0.5mm ² HVIL circuit	2.5mm ² – 4mm ² power circuit; 0.5mm ² – 0.75mm ² HVIL circuit	2mm ² – 5mm ² power circuit; 0.5mm ² HVIL circuit
Overmolding	No	No	No	No	No
Material	Plastic	Plastic	Plastic	Plastic	Plastic
Touch proof (IP2X)	No	Yes	Yes	Yes	Yes


Product Series	AK Pass-Through	Metal Pass-Through	AK Class 4	RCS 890	RCS 800
					
Applications	Motors and Drives		High Power		
Voltage	1000V DC	1000V DC	1000V DC	1000V DC	1000V DC
Temperature rating	-40°C to +140°C	-40°C to +125°C	-40°C to +140°C	-40°C to +125°C	-40°C to +125°C
Contact size	N/A	N/A	8mm (Round Contact)	8mm (Round Contact)	8mm (Round Contact)
Operating current	190A at 140°C	Up to 250A at 85°C	170A at 140°C	220A at 70°C	230A at 70°C
Secondary locking	No	No	Yes	Yes	Yes
HVIL	No	No	Yes	Yes	Yes
Sealing	IP67, IP6K9K	IP67, IP6K9K	IP67, IP6K9K	IP67, IP6K9K	IP67, IP6K9K
Shielding	Yes	Yes	Yes	Yes / With braid	Yes / With braid
Wire size	16mm ² – 50mm ²	25mm ² – 50mm ²	25mm ² – 50mm ²	35mm ² – 50mm ² power circuit; 0.5mm ² – 0.75mm ² HVIL circuit	35mm ² – 50mm ² power circuit; 0.5mm ² – 0.75mm ² HVIL circuit
Overmolding	No	No	No	No	No
Material	Plastic	Metal	Plastic	Plastic	Plastic
Touch proof (IP2X)	N/A	N/A	Yes	Yes	Yes

High Voltage Connection Systems

TE Connectivity





Product series	HVA280	HVA630	HVP800	HVP1100
				
Applications	Auxiliary Systems		High Power	
Voltage	Individual – 600V DC Multi-core – 850V DC	850V DC	650V / 850V	750 VDC
Temp rating	-40°C up to 125°C	-40°C up to 140°C	-40°C up to 140°C	-40°C up to 125°C
Contact size	2.8mm AMP MCP	AMP MCP 6.3 / 4.8 contact	8.0mm round contact	11mm round contact
Operating current	Individual - 40A at 85°C Multi-core - 33A at 85°C	40A at 140°C	200 AMP at 85°C	300A at 85°C
Secondary locking	Yes	Yes	Yes	Yes
HVIL	Yes	Yes	Yes	Yes
Sealing	IP67, IP6K9K	IP67, IP6K9K	IP6K9K, IPXXD	IP6K7, IP6K9K
Shielding	Yes	Yes	Yes	Yes
Wire size	Individual – 3.0mm ² & 4.0mm ² Multi-core – 2 x 4.0mm ²	2.5mm ² – 6.0mm ²	25mm ² – 50mm ²	70mm ²
Overmolding	No	No	No	No
Material	Plastic	Plastic	Plastic	Plastic
Touch proof (IP2X)	IP2XB	IP2XB	IPXXB	IP2XB

Product series	Manual Service Disconnect	IPT	Polanco High Power Products
			
Applications	High Power		
Voltage	450VDC (with fuse) 1000VDC (shunt)	800-1000 VDC	1800V AC RMS
Temp rating	-40°C to 65°C	-65°C up to 175°C	-40°C up to 140°C
Contact size	N/A	N/A	Various
Operating current	Up to 630A	300A at 105°C (50mm ²)	400 to 1000A
Secondary locking	Yes	No	No
HVIL	Yes	No	No
Sealing	IPX7, IP6K9K	IP6K9K	IP68
Shielding	Yes	Yes	Yes
Wire size	N/A	16mm ² – 50mm ²	50mm ² – 240mm ²
Overmolding	No	No	No
Material	Plastic	Plastic	Metal
Touch proof (IP2X)	IP2XB	N/A	IP2XB

Charging Solutions

Amphenol

Amphenol®

Charging Product Series	HVCO - CCS Combo Cables	HVCO - CCS Combo Inlets
		
Applications	Charging Applications	
Regional standards	CCS – Type II – DC Combo	CCS – Type II – DC Combo
Voltage	AC – 250 to 480V DC – up to 1000V	AC – 250 to 480V DC – up to 1000V
Operating current	AC – up to 32A DC – 60A, 125A and 200A	AC – up to 32A DC – 60A, 125A and 200A
Phase	1-Phase 3-Phase	1-Phase 3-Phase
Contact size	8mm	8mm
Temp rating	-30°C – 50°C	-30°C – 50°C
Mating cycles	> 10,000 cycles (unloaded)	> 10,000 cycles (unloaded)
Electrical protection	IP44 (mated)	IP44 (mated)
Validations	CE Approved	CE Approved
Wire size	Various	Various
Cable lengths	Standard – 3m and 5m Custom lengths possible	Standard – 0m, 3m and 5m Custom lengths possible
Available options	NTC and PT temp sensors	12V and 24V E-lock NTC and PT temp sensors

Aptiv





• APTIV •

Charging Product Series	AC Charge Inlet – Type 1 /Type II	AC Charge Coupler – Pigtails	AC charge – Mode 2 Assembly with ICCB	AC Charge Mode 3 Jumpers
				
Applications	Charging Applications			
Regional standards	Type 1 – SAE J1772, Type 2 – IEC62196	Type 1 – SAE J1772, Type 2 – IEC62196 GBT – 20234	Type 1 – SAE J1772, Type 2 – IEC62196	Type 1 – SAE J1772 Type 2 – IEC62196
Voltage	Type 1 – 120V & 240V Type 2 – 230V & 400V	Type 1 – 120V & 240V, Type 2 – 240V & 480V GBT – 120V & 240V	Type 1 – 120V Type 2 – 240V	Type 1 – 240 V Type 2 – 240 V
Operating current	Type 1 – 15A, 30A Type 2 – 16A, 32A, 63A	Type 1 – 18A, 20A, 25A, 32A Type 2 – 16A, 20A, 32A, GBT – 20A	Type 1 – 12A Type 2 – 6 to 15A	Type 1 – 20A, 32A Type 2 – 20A, 32A
Phase	1-Phase, 3-Phase	1-Phase, 3-Phase	1-Phase	1-Phase – 3-Phase
Contact size	Type 1 – AWG 14, 10 Type 2 – 2.5mm ² , 6mm ² , 16mm ²	AWG 14, 12, 10 2.5mm ² , 6mm ²	2.5mm ²	2.5mm ² , 6mm ²
Temp rating	-40°C to +85°C	-40°C to +50°C	-40°C to +85°C	40 °C to +85 C
Mating cycles	10,000 Mating cycles min.	10,000 Mating cycles min.	10,000 Mating cycles min.	14,000 Mating Cycles min.
Electrical protection	IP2XB, IP44 (connector/inlet mated)	IP2XB, IP44 (connector/inlet mated)	IP2XB	IP2XB
Validations	Type 1 – UL recognised, Delphi GTP Type 2 – According to IEC62196-2-2	Type 1 – UL & CE, Type 2 – CE GB/T – CCC & CQC	UL / CE marking	CE Marking
Wire specification	Various	Various	Various	Various
Cable lengths	N/A	5.0m, 6.5m, 7.0m, 7.6m	5m	4m, 6.5m
Available options	With or without cover	Plastic or soft grip handle	Europe, UK, Denmark, Switzerland, Norway, France, Italy – 15A version with CEE 16/3 grid plug	

Charging Solutions

ITT Cannon





Charging Product Series	AC Charging – Jumper Cables	AC Charging – Pigtails	AC Charging – Stake Cutlets	AC Charging – Vehicle Inlets
				
Applications	Charging Applications			
Regional standards	Type 2 – IEC62196 GB/T – 20234	Type 1 – SAE J1772 or IEC62196 Type 2 – IEC62196 GB/T – 20234	Type 2 – IEC62196 GB/T – 20234	Type 1 – SAE J1772 or IEC62196 Type 2 – IEC62196 GB/T – 20234
Voltage	Type 2 – 240V / 480V GB/T – 250V / 440V	Type 1 – 120V / 240V Type 2 – 240V / 480V GB/T – 250V / 440V	Type 2 – 240V / 480V GB/T – 250V / 440V	Type 1 – 120V / 240V Type 2 – 240V / 480V GB/T – 250V / 440V
Operating current	Type 2 – 20A / 32A / 64A GB/T – 10A / 16A / 32A / 63A	Type 1 – 16A / 20A / 30A / 40A / 75A / 80A Type 2 – 20A / 32A / 64A GB/T – 10A / 16A / 32A / 63A	Type 2 – 20A / 32A / 64A GB/T – 10A / 16A / 32A / 63A	Type 1 – 20A / 40A / 75A / 80A Type 2 – 20A / 32A / 64A GB/T – 10A / 16A / 32A / 63A
Phase	1 & 3 Phase	Type 1 – 1 Phase Type 2 & GB/T – 1 & 3 Phase	1 & 3 Phase	Type 1 – 1 Phase Type 2 & GB/T – 1 & 3 Phase
Temp rating	Type 2 – -25°C to +40°C GB/T – -30°C to +50°C	Type 1 – -30°C to +50°C Type 2 – -25°C to +40°C GB/T – -30°C to +50°C	Type 2 – -25°C to +40°C GB/T – -30°C to +50°C	Type 1 – -30°C to +50°C Type 2 – -25°C to +40°C GB/T – -30°C to +50°C
Mating cycles	10,000 Mating cycles min	10,000 Mating cycles min	10,000 Mating cycles min	10,000 Mating cycles min
Electrical protection	Type 2 – IP44 min GB/T – IP54/IP55	Type 1, acc. SAEJ1772 – meets UL50, Type 3R/3S Type 1, acc. IEC62196 & Type 2 – IP44 min GB/T – IP54/IP55	Type 2 – IP44 min GB/T – IP54/IP55	Type 1 – Meets UL50, Type 3R/3S Type 1, acc. IEC62196 & Type 2 – IP44 min GB/T – IP54/IP55
Validations	Type 1, acc. IEC62196 – CE, ETL, IEC 62196-1 / 62196-2 Type 1, acc. SAEJ1772 – UL file E330790, CE, PSE-JET Type 2 – CE, ETL, IEC 62196-1 / 62196-2 GB/T – CQC 13029087619	Type 1, acc. IEC62196 – CE, ETL, IEC 62196-1 / 62196-2 Type 1, acc. SAEJ1772 – UL FILE E330790, CE, PSE-JET Type 2 – CE, ETL, IEC 62196-1 / 62196-2 GB/T – CQC 13029087619	Type 2 – CE, ETL, IEC 62196-1 / 62196-2 GB/T – CQC 13029087619	Type 1, acc. IEC62196 – CE, ETL, IEC 62196-1 / 62196-2 Type 1, acc. SAEJ1772 – UL file E330790, CE, PSE-JET Type 2 – CE, ETL, IEC 62196-1 / 62196-2 GB/T – CQC 13029087619
Wire specification	Type 2 – DIN EN 50620 GB/T – GB/T 33594-2017	Type 1, acc. SAEJ1772 – UL62 or JET Type 1, acc. IEC62196 & Type 2 – DIN EN 50620 GB/T – GB/T 33594-2017	Type 2 – DIN EN 50620 GB/T – GB/T 33594-2017	Type 1, acc. SAEJ1772 – UL62 OR JET Type 1, acc. IEC62196 & Type 2 – DIN EN 50620 GB/T – GB/T 33594-2017
Cable lengths	Various	Various	Various	Various
Available options	Dust caps, strain reliefs, cable outlet direction	Dust caps, strain reliefs	Dust caps, drain spouts, locking devices, rubber boots, flange gaskets	Dust caps, drain spouts, locking devices, rubber boots, flange gaskets

Charging Solutions

TE Connectivity



Charging Product Series	AMP+ Charging Cables	AMP+ Charging Inlets
		
Applications	Charging Applications	
Regional standards	Type 1 US – IEC 61851-1; SAE J 1772 Type 1 Japan – IEC 61851-1; SAE J 1772, Type 2 EU – IEC 61851-1	Type 1 – SAE J1772, Type 2 – IEC62196, GB/T – 20234
Voltage	Type 1 US – 99-121V, Type 1 Japan – 180-220V, Type 2 EU – 195-260V	Type 1 – 250V, Type 2 – 480V, GB/T – 440V
Operating current	15A	Type 1 – 32A, Type 2 – 16A, 32A, GB/T – 16A, 32A
Phase	1-Phase	Type 1 – 1-Phase, Type 2 – 1 or 3-Phase, GB/T – 1 or 3-Phase
Contact size	Open	0.75-1.00mm ² / 4.00mm ² / 6.00mm ²
Temp rating	-30°C and +50°C	-30°C and +50°C
Mating cycles	10,000 Mating cycles	10,000 Mating cycles
Electrical protection	IP55 ICCB, IP44 connectors plugged to inlet	IP54 (front), IP44 (rear)
Validations	UL or CE	UL or CE
Wire size	0.5mm ² / 2.50mm ²	N/A
Cable lengths	Open	Open
Available options	NEMA 5-15, JIS C 8303 A.16, CEE7/7 90°, CEE7/7 180°, CEI 23-16/VII BS 1363, SEV 1011, AFSNIT 107-2-D1	Rotatable cable outlet

High Voltage Relays

TE Connectivity

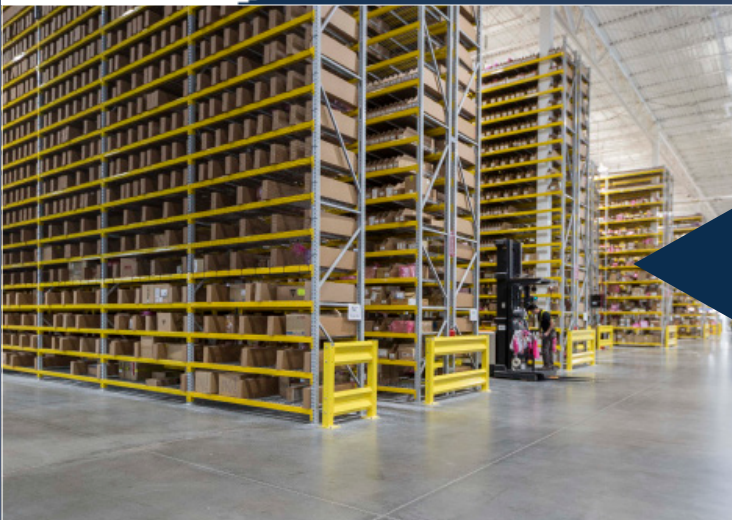


Relay Product Series	Kilovac Relays – EV100, EV200, LEV100, LEV200	Kilovac Relays, Current Sensing – KSC01, KSC03	Kilovac Relays – KHR500, K1K06X
			
Applications	Charging and Battery Storage		
Contact voltage rating	12-900V	12-600V	28-1000V
Contact arrangement	Spst-no (form X)	Spst-no (form X)	Spst-no (form X)
Contact current rating (A) (Max continuous carry current)	100A/500A	100A/500A	600A/1000A
Contact number of poles	Single Pole	Single Pole	Single Pole
Contact switching power (W/VA)	LEV & EV100 = 20KW, 50K cyc. LEV & EV200 = 60KW, 10K cyc.	KCS01 = 24KW, 10K cyc. KCS03 = 60KW, 10K cyc.	KHR500 = 80KW, 4K cyc. K1K = 130KW, 10K cyc.
Coil power rating (DC) (MW) (DC coil/bistable 1 coil/2 coils)	See data sheet	See data sheet	See data sheet
Coil voltage rating	LEV = 12V-48V EV = 12-95V	12V – 24V	12V – 24/28V
Coil magnetic system	LEV = single coil (no economizer) EV = dual coil economiser or pulse width modulator (PWM)	Mechanical or electronic two-coil economiser with internal suppression	Integrated dual-coil electronic “Cut throat” economiser
Mounting type	Bottom/side	Bottom	Bottom/bottom busbar
Terminal type	External thread	Internal/external thread	Internal thread/busbar
Insulation initial resistance (mΩ)	500 Vdc: 100MΩ initial, 50MΩ end of life	500 Vdc: 100 MΩ initial, 50MΩ end of life	500 Vdc: 100 MΩ initial, 50MΩ end of life



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