

48 VOLT CONNECTIVITY SOLUTIONS

END-TO-END CONNECTIVITY SOLUTIONS
FOR 48V ARCHITECTURES



Connectivity for 48V Architectures

Nearly all major European vehicle manufacturers have announced their intention to develop vehicles based on two voltage (12V / 48V) electrical systems. The motivation is to address the increasing demand for power, from enhanced performance, self-driving and safety technologies, while finding cost effective solutions to meeting stricter regulations on CO₂ emissions.

Utilizing an electric motor/ generator instead of an alternator, an additional 48V battery, e-charger and regenerative brakes, these new architectures have the potential to generate significant amounts of electrical power that can lead up to 15% increase in fuel efficiency whilst achieving between 25% and 50% more low-end torque.

Connectivity Requirements

The primary requirement of connectors for 48V electrical systems is to be able to accommodate the wire sizes necessary for high-power applications. That means they must fulfill new requirements for a pin pitch providing clearance and creepage distance in accordance with DIN 60664-1. In addition, connector systems should be sealed and have locking safeguards to prevent accidental unmating and meet automotive specifications for robustness.

TE Connectivity 48V Solutions

We offer end-to-end solutions based on one of the largest portfolios of proven connectivity components. Each component is highly robust - tested to the highest automotive specifications, high-performance and designed to be lightweight and compact.

Terminals and Connectors

Our portfolio of sealed 48V ready terminals and connectors covers all the standard 48V current ranges. These range from bolt-down integrated power terminals, supporting wire sizes up to 120 mm², large crimp-termination sealed connectors to smaller highly robust connectors, supporting the 48V system side aggregates. Each fulfils industry requirements for sealing and provide the necessary clearance and creepage distance in accordance with DIN 60664-1.

End-to-end Battery Solutions

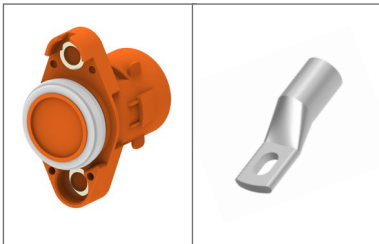
In addition, we are working with OEMs and battery manufacturers to design connectivity and sensors for battery management applications. This includes miniaturized connectors for battery electronics, a wide range of sensors high power cell termination and battery assembly solutions.

48V architectures have the potential to generate significant amounts of electrical power that can lead up to 15% increase in fuel efficiency whilst achieving between 25% and 50% more low-end torque

48 VOLT MAIN POWERTRAIN CONNECTIVITY

1 IPT Termination System

- Bolt-down termination
- Up to 120 mm² wire
- Up to 400A @ 100° C
- Optimized for small assembly holes
- Sealing and 360° shielding



2 Single Wire Sealed Connector System

Based on AMP MCP 9.5 connectors

- Crimp termination
- Up to 10 mm² wires
- Derating up to 70A @ 80° C
- TPA and CPA
- Sealed tab housing available



3 2 Way Sealed Connector System

Based on MCON 12 connectors

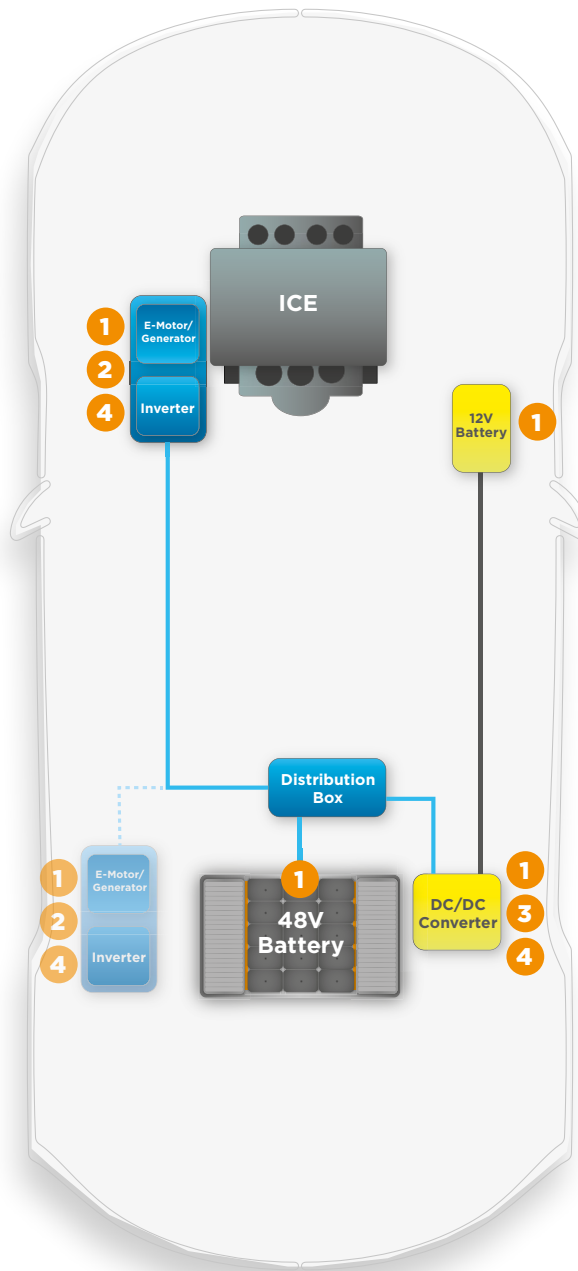
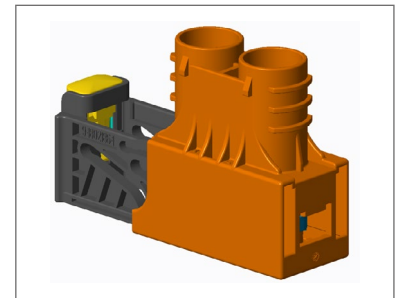
- Welded termination
- Up to 35 mm² wires
- Derating up to 179A @ 80° C
- TPA and CPA
- Sealed tab housing available



4 2 Way Connector System for Individually Sealed Wires

Based on MCON 12 connectors

- Welded termination
- Up to 35 mm² wires
- Derating up to 179A @ 80° C
- TPA and CPA
- Individually sealed cavities



Battery Assembly, including:

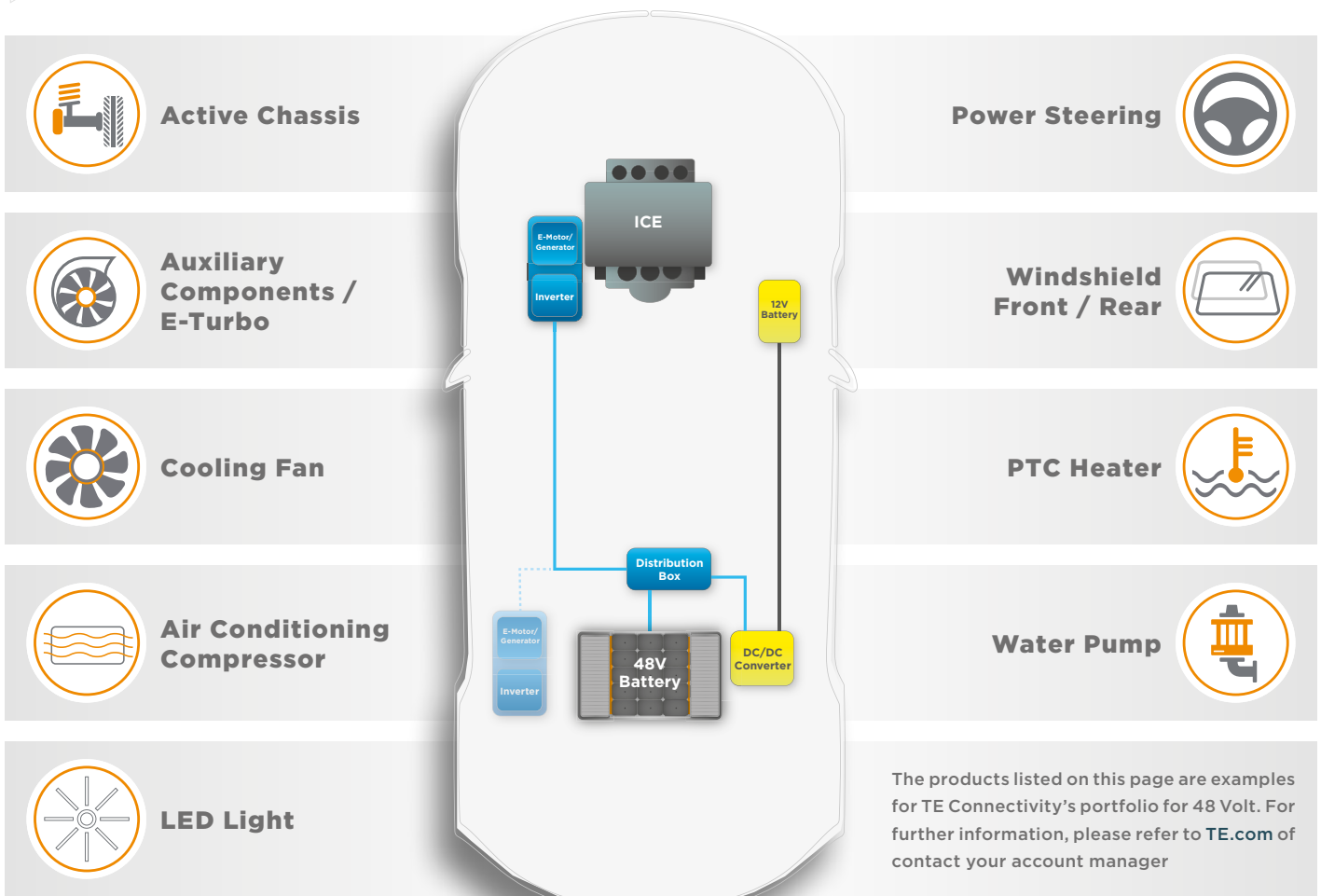
- Upper Case Assembly Pack Cover
- Center Plate Assembly
- Cell Module Assembly
- Lower Case Assembly Pack Cover



TE Connectivity's portfolio can support the full range of connectivity requirements of the main powertrain aggregates within a 48V architecture. This includes connector wire sizes from 16 mm² to 120mm², supporting up to 400A.

The products listed on this page are examples for TE Connectivity's portfolio for 48 Volt. For further information, please refer to TE.com or contact your account manager

48 VOLT SIDE AGGREGATES CONNECTIVITY



The products listed on this page are examples for TE Connectivity's portfolio for 48 Volt. For further information, please refer to TE.com or contact your account manager.

In addition, TE Connectivity's portfolio can support the full range of connectivity requirements of side aggregates within a 48V architecture. This includes supporting wire sizes from 1.5 mm² to 50 mm², sealed 12V compatible connectors with a power range up to 200 Amps as well as a comprehensive portfolio supporting lower power range applications (e.g. up to 20A).

For lower power applications, TE Connectivity's MCON connector series (Including HPF 1.2) and the heavy duty sealed connector series are ideally suited.

TE PORTFOLIO FOR 48 VOLT SIDE AGGREGATE CONNECTIVITY



MCON Connectors

MCON 1.2 | 2.8 | 6.3 | 8 | 9.5 | 12

Based on a two-piece contact design that separates the electrical from the mechanical performance, the MCON connector series, including HPF 1.2, offers a sealed connector system that carries up to 179A.

It is suited to electronic and electrical applications in motor vehicles with high vibration and mechanical stress levels.



Heavy Duty Sealed Connector Series

The heavy duty sealed connector series features heavy-duty, environmentally sealed connectors.

Designed to accommodate AMP MCP 1.5K, 2.8, 6.4/4.8K, and 9.5 contacts, the connectors contain a slide lock for mating and can carry up to 80A @ 80°C.



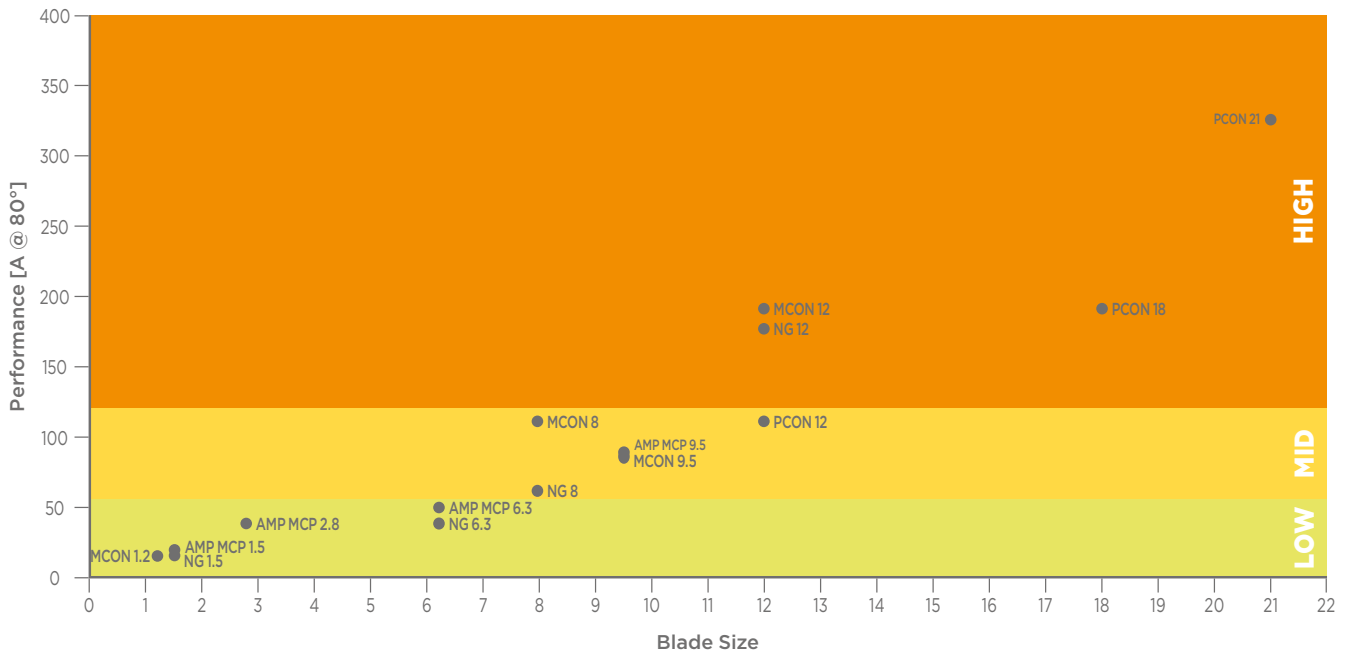
AMP MCP Connectors


AMP MCP 1.2 | 1.5 | 2.8 | 6.3 | 9.5

The AMP MCP connector contacts feature a two-piece receptacle/tab designs with separate electrical and mechanical properties enabling high performance reliability up to 70A.

The contacts meet requirements for power connections in sealed and unsealed applications, wire-to-wire and wire-to-board applications, as well as high voltage and higher vibration applications.

48 VOLT PORTFOLIO



	Connector	Part Number	Tab Size [mm]	Power Rating [A] up to	Fitting Terminal Group	Male/ Female	Number of Pins
	Heavy Duty Sealed Connector Series	1-1418483-1	2.8	40	AMP MCP	Female	2
		1-1703839-1	2.8	40		Male	2
		1-1564542-1	6.3	40		Female	2
		1-1564544-1	6.3	40		Male	2
		1-1564330-1	6.3	40		Female	4
		1-1564534-1	6.3	40		Male	6
		1-1418448-1	1.5	20		Female	3
		1-1670730-1	1.5	20		Male	3
		1-1418469-1	1.5	20		Female	6
		1-1703820-1	1.5	20		Male	6
		1-1703639-1	1.5	20		Female	12
		1-1564414-1	1.5	20		Male	12
		1-1563759-1	1.5	20		Female	18
		1-1564412-1	1.5	20		Male	18
		1-1418483-1	2.8	40		Female	2
		1-1703839-1	2.8	40		Male	2
		1-1418390-1	2.8	40		Female	4
		1-1703818-1	2.8	40		Female	4
		1-1418437-1	2.8	40		Female	4
		1-1670901-1	2.8	40		Female	12


48 VOLT PORTFOLIO (continued)

	Connector	Part Number	Tab Size [mm]	Power Rating [A] up to	Fitting Terminal Group	Male/ Female	Number of Pins
	Heavy Duty Sealed Connector Series, Hybrid	1-1418480-1	1.5-2.8	20/40	AMP MCP	Female	7
		1-1564514-1	1.5-2.8	20/40		Female	10
		2282011-1	1.5-2.8	20/40		Male	10
		1-1564516-1	1.5-2.8	20/40		Male	10
		1-1563878-1	1.5-2.8	20/40		Female	15
		1-1564530-1	1.5-2.8	20/40		Male	15
		1-1564337-1	1.5-2.8	20/40		Female	16
		1-1564528-1	1.5-2.8	20/40		Male	16
	HPF	5-2297795-1	1.2	17	HPF	Female	2
		5-2297811-1	1.2	17		Female	3
		5-2307329-1	1.2	17		Female	4
		5-2307334-1	1.2	17		Female	5
	HP-HPSL	1-1801175-1	1.5	18	NG	Female	2
		1801176-1	1.5	18		Female	2
		1801174-1	1.5	18		Male	2
	MCON	1-1703498-1	1.2	17	MCON	Male	2
		1-2236896-1	1.2	17		Female	2
		1-1718643-1	1.2	17		Female	2
		1-1703494-1	1.2	17		Male	3
		1-2236343-1	1.2	17		Female	3
		1-1718644-1	1.2	17		Female	3
		1-1564559-1	1.2	17		Male	4
		1719566-1	1.2	17		Male	4
		1-1718645-1	1.2	17		Female	4
		1-2287960-5	1.2	17		Female	4
		1-2301519-5	1.2	17		Male	4
		1-2141520-1	1.2	17		Male	5
		1-1718806-1	1.2	17		Female	5
		1-2287965-5	1.2	17		Female	6
		1-2294976-5	1.2	17		Male	6
		1-1719393-1	1.2	17		Female	8
		1-2287970-5	1.2	17		Female	8

48 VOLT PORTFOLIO (continued)

	Connector	Part Number	Tab Size [mm]	Power Rating [A] up to	Fitting Terminal Group	Male/ Female	Number of Pins
	MCON	1-2301520-5	1.2	17	MCON	Male	8
		1-2282337-5	1.2	17		Female	10
		1801600-1	1.2	17		Female	10
		1-2301521-5	1.2	17		Male	10
		1801606-1	1.2	17		Male	10
		1-2323170-5	1.2	17		Female	12
		1-2316338-5	1.2	17		Male	12
		8-2364994-1	12	179		Female	1
		8-2364998-1	12	179		Male	1
		2343344-1	12	179		Female	2
		9-1802184-1	12	179		Female	2
		on request	8	109		Female	2
		2289828	9.5	68		Female	2
		2316585	9.5	68		Male	2
	AMP MCP	1897212-1	1.2	17	AMP MCP	Female	2
		1-1563305-5	1.2	17		Female	3
		1823679-1	1.2	17		Female	3
		1-1563305-4	1.2	17		Female	4
		1563689-1	1.2	17		Female	4
		6-2278090-1	1.2	17		Female	5
		6-2137400-1	1.2	17		Female	5
		2137400-1	1.2	17		Female	5
		1823467-1	1.2	17		Female	6
		2278526-1	1.2	17		Female	10
		1897726-2	1.2	17		Female	10
		284953-1	1.2	17		Female	12
		284858-1	1.2	17		Male	12
		2315573-1	1.2	17		Female	14
		1897688-2	1.2	17		Female	18
		1897214-1	6.3	52		Female	2
		1-1718624-1	6.3	52		Female	2
		1897213-2	6.3	52		Male	2

48 VOLT PORTFOLIO (continued)

	Connector	Part Number	Tab Size [mm]	Power Rating [A] up to	Fitting Terminal Group	Male/ Female	Number of Pins
	AMP MCP	1-1564512-1	1.5	20	AMP MCP	Male	8
		2098198-5	2.8	40		Female	1
		1-1718624-1	2.8	40		Female	2
		1326455-1	2.8	40		Female	2
		1-1355200-1	2.8	40		Female	2
		2-1355200-2	2.8	40		Female	2
		3-1718624-2	2.8	40		Female	2
		1-1718627-1	2.8	40		Female	3
		1326460-1	2.8	40		Female	3
		1-1718628-1	2.8	40		Female	4
		1745078-2	2.8	40		Female	4
		1745078-1	2.8	40		Female	4
		1718562-1	2.8	40		Female	4
		1-1718562-1	2.8	40		Female	4
		1534159-1	2.8	40		Male	4
		953600-1	2.8	40		Female	5
		2316653-2	2.8	40		Female	5
		2109441-2	2.8	40		Female	8
		1-1418479-1	2.8	40		Female	8
		1-1670894-1	2.8	40		Female	8
		1-1564522-1	2.8	40		Male	8
		1801286-1	2.8	40		Female	9
		1745072-2	2.8	40		Female	15
		1801326-1	2.8	40		Female	15
		2109441-4	2.8	40		Female	8
		3-2109441-1	2.8	40		Female	8
		1743793-1	9.5	70		Female	1
		1743797-1	9.5	70		Male	1
		1355328-1	9.5	70		Female	2
		1394026-1	9.5	70		Male	2

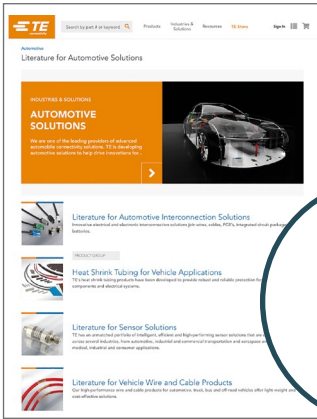
48 VOLT PORTFOLIO (continued)

	Connector	Part Number	Tab Size [mm]	Power Rating [A] up to	Fitting Terminal Group	Male/ Female	Number of Pins
	AMP MCP Hybrid	1-1670214-1	1.5-2.8	20/40	AMP MCP	Male	7
		284848-1	1.5-2.8	20/40		Female	12
		284844-1	1.5-2.8	20/40		Male	12
		1897210-1	2.5-6.3	20/40		Female	4
		1897209-1	2.5-6.3	20/40		Male	4
		1718878-1	6.3-9.5	52/70		Female	4
	NG	1544680-1	8	62	NG	Female	1
		1544606-1	8	62		Male	1
		1544978-1	8	62		Female	2
		1544334-1	8	62		Male	2
		on request	12	170		Female	2
		on request	6.3	39		Female	5
	NGP	1544633-1	6.3	39	NG	Female	3
	HVA 1200	on request	12	109	PCON	Female	2
		on request	18	180		Female	2
		on request	21	360		Female	2
	IPT Housing	x1991226-x		300	IPT		1
		2141784-2		300			2
		2141783-1		300			3

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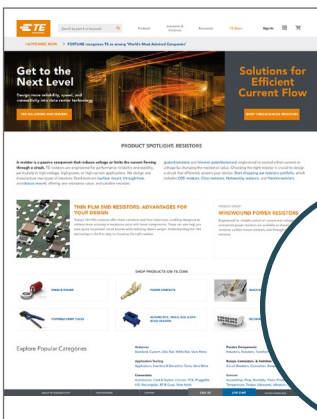
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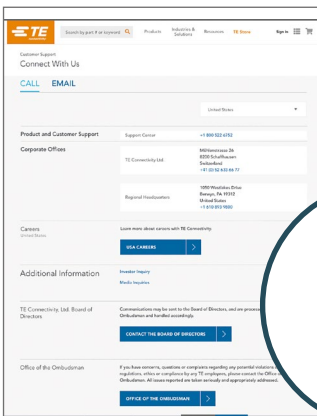
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