



48 VOLT CONNECTIVITY SOLUTIONS

for Industrial &
Commercial Transportation

48V in Industrial & Commercial Transportation

48V electrical systems are gaining increasing traction in the automotive and commercial transportation industry. Not only do they have the potential to optimize costs through weight reductions and higher fuel efficiency, but also offer the opportunity for reduced emissions in an increasingly regulated market.

An increase in power capability and density, enabling of electrified auxiliaries, and the efficient and feasible way to generate high power in the vehicle are additional arguments for this forward-looking technology.

To support you on the way to a 48V or multi-voltage system, TE Connectivity (TE) has developed an evaluation strategy to review our connector portfolio regarding the usability within a 48V system.

TE Connectivity's 48V Evaluation Strategy

As the transportation industry moves toward higher voltage systems, it is important for TE to provide its customers with the latest information regarding enhancements to our products' electrical performance. Proper product selection is vital for improving product reliability and safety.

TE's evaluation process takes into consideration ways in which electrical breakdown may occur and analyzes the required minimum distances between components for given applications.

TE Transportation Solutions has conducted studies for a wide range of products and determined the suitability of these products to both the UL 840 (Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment) and IEC 60664-1 (Insulation coordination for equipment within low-voltage systems - principles, requirements and tests) standards.

KEY INDUSTRIES

48V systems can be utilized in the truck, bus, construction, agriculture, and two-wheeler industries.



Truck



Bus



Agriculture



Construction



Two-Wheeler

APPLICATIONS

48V systems can be utilized in the following applications:



E-motor/Generator



Regenerative Brake



Multi-Voltage System



Hybrid System



Pumps



Fans

These standards differ slightly, but each contain similar criteria for evaluating electrical components. Creepage and Clearance requirements are determined from the UL and/or IEC specifications, given the nominal operating voltage, pollution degree, altitude, overvoltage category and housing material properties.

The studies conducted determine if the insulating material used and terminal spacing present is sufficient to operate at 60 volts, to support 48 volt systems, by taking into

account the nominal terminal spacing and potential shift within the connector due to freedom of movement and the allowable connector tolerances. The studies determine if products are capable of meeting requirements under the assumption of a pollution degree 2 environment (for sealed connectors) and at a 2,000 meter elevation.

For more stringent requirements, application parameters should be discussed with the responsible TE Product Engineer.

TE Connectivity's 48 Volt Solutions for Industrial & Commercial Transportation



Heavy Duty Sealed Connector Series

Parts within cavity arrangements 2-18 have been assessed and approved based on our white paper process and assumptions.

PN 1-1418390-1 (4 pos)
PN 1-1564530-1 (15 pos)



DT & DTP

DT parts within cavity arrangements 2-12 have been assessed and approved based on our white paper process and assumptions.

DTP parts within cavity arrangements 2-4 have been assessed and approved based on our white paper process and assumptions.

PN DT06-2S (2 pos)
PN DTP06-2S (2 pos)



AMPSEAL 16 Lever Solution

Parts within cavity arrangements 16-28 have been assessed and approved based on our white paper process and assumptions.

PN 2138839-1 (28 pos)
PN 2138846-1 (28 pos)



HD10

Parts within cavity arrangement 9 have been assessed and approved based on our white paper process and assumptions.

PN HD10-9-1939PE-P080 (9 pos)
PN HD16-9-1939S-P080 (9 pos)



LEAVYSEAL

Parts within cavity arrangement 92 have been assessed and approved based on our white paper process and assumptions.

PN 1-1452228-9 (92 pos)
PN 5-1703998-1 (92 pos)



HDP20

Parts within cavity arrangements 7-47 have been assessed and approved based on our white paper process and assumptions.

PN HDP24-24-9PE (9 pos)
PN HDP24-24-31PE (31 pos)

Visit our [48 Volt page](#) on TE.com to view these featured products. TE will continue to evaluate products for 48V systems. For more in-depths information about our evaluation process for 48V systems, and all evaluated products, please visit our [48V page](#) on TE.com to download the white paper or contact your Sales Engineer to discuss all our available solutions.

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