



FTMRS SOLAR

# Inverter high voltage discharge





## Overview

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What is high-voltage active discharge?

High-voltage active discharge refers to the process in which the electrical energy stored in high-voltage capacitors is rapidly (typically within 1-2 seconds) released to a safe level (reducing the high voltage to below 60V) through a specialized discharge circuit and control strategy after the high-voltage system of the EV is powered off.

Do EV traction inverters need a DC link active discharge?

Every EV traction inverter requires a DC link active discharge as a safety-critical function. The discharge circuit is required to discharge the energy in the DC link capacitor under the following conditions and requirements: Power transistor on, off control using the TPSI3050-Q1.

What is a passive discharge in a high-voltage system?

Application scenarios: Passive discharge ensures gradual voltage reduction within the high-voltage system when the vehicle is switched off and no other discharge mechanisms are active. It serves as a final safety barrier when active discharge paths fail. How quickly should a high-voltage system discharge to be considered safe?

What is a high-voltage DC link?

Image used courtesy of Adobe Stock High-voltage DC links are central to a wide range of power electronic systems in electric and hybrid vehicles—including inverters relying on large capacitors (e.g 1 mF) to stabilize the voltage, reduce ripple, and support efficient control and operation.



## Inverter high voltage discharge

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High-voltage discharge system of EV

Feb 15, 2025 · High-voltage active discharge refers to the process in which the electrical energy stored in high-voltage capacitors is rapidly (typically within 1-2 seconds) released to a safe ...

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What is Partial Discharge in an Inverter-Driven Motor? , HIOKI

High-voltage inverter-driven motors, such as those found in EVs, are more prone to partial discharge phenomena. In general, partial discharge occurs when a voltage greater than ...

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Infineon high voltage Inverter Application Presentation

May 25, 2025 · Infineon high voltage Inverter Application Presentation Traction Inverter trends Semiconductors contribute to improved energy efficiency, but also to size and weight ...

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SLAAEL5 Application brief , TI

The DC-Link capacitor is a part of every traction inverter and is positioned in parallel with the high-voltage battery and the power stage (see Figure 1). ...

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Solis 75-125kW C&I High Voltage Energy Storage Inverter\_Hybrid Inverter

Introducing the S6-EH3P (75-125)K10-NV-YD-H Series, High-voltage, three-phase energy storage for commercial applications. This advanced inverter series boasts a maximum ...

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Enabling Smarter DC Link Discharge in EV Traction Inverters

May 25, 2025 · Image used courtesy of Adobe Stock DC Link Discharge Challenges in Inverter High-voltage DC links are central to a wide range of power electronic systems in electric and ...

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Traction Inverters A Driving Force Behind Vehicle ...

Apr 1, 2023 · To achieve these goals, traction inverter design trends include using advanced control algorithms, employing SiC MOSFETs for the switching transistors in the power stage, ...

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Experience With Online Partial-Discharge Measurement in High-Voltage

Aug 15, 2017 · Partial-discharge (PD) testing has long been an important tool for assessing the condition of the high-voltage insulation in motor and generator stator windings. In the past ...

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A DC-Link Hybrid Active Discharge Scheme for Traction Inverters

Sep 6, 2024 · The paper includes a simulation comparison of winding-based discharge with the proposed Hybrid discharge technique. The proposed solution has a higher discharge rate and ...

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High-voltage discharge system of EV

Feb 15, 2025 · High-voltage active discharge refers to the process in which the electrical energy stored in high-voltage capacitors is rapidly (typically ...

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## S6-EH3P (30-60)K-H (21A)

C & I Energy Storage Inverter S6-EH3P (30-50)K-H Three phase high voltage energy storage inverter / 4 Integrated MPPTs with string current capacity of up to 20A / Maximum ...

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## A DC-Link Hybrid Active Discharge Scheme for Traction Inverters

Oct 28, 2024 · This paper investigates control methods to quickly and safely discharge the high voltage DC bus capacitor for the permanent magnet synchronous machine (PMSM) drive ...

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## EXPERIENCE WITH ON-LINE PARTIAL DISCHARGE ...

Jun 6, 2018 · Abstract - Partial discharge (PD) testing has long been an important tool for assessing the condition of the high voltage insulation in motor and generator stator windings. ...

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## Why Pre-Charge Circuits are Necessary in High-Voltage ...

Dec 23, 2023 · Pre-charge In a high voltage system, a typical block diagram may consist of two high current contactors with a separate pre-charge contactor, and a DC link capacitor in ...

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## Solis 75-125kW C& I High Voltage Energy ...

Introducing the S6-EH3P (75-125)K10-NV-YD-H Series, High-voltage, three-phase energy storage for commercial applications. This advanced inverter ...

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## Active Discharge and Pre-charge of EV High Voltage ...

Apr 20, 2023 · Fast Discharge prevents Fire hazard actively discharged to prevent residual voltage. separate disconnection unit. power resistors with minimal time discharge in less than ...

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## A DC-Link Hybrid Active Discharge Scheme ...

Oct 28, 2024 · This paper investigates control methods to quickly and safely discharge the high voltage DC bus capacitor for the permanent magnet ...

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## Solis 80-125kW C& I High Voltage Energy ...

High voltage, three-phase energy storage for commercial applications. The inverter series, which boasts a maximum charge/discharge current of ...

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## How to Reduce the Power Resistor for DC-Link ...

Aug 16, 2024 · The DC-Link capacitor is a part of every traction inverter and is positioned in parallel with the high-voltage battery and the power stage (see Figure 1). The DC-Link ...

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## Paper Title (use style: paper title)

Jul 28, 2025 · A DC link capacitor is connected between the positive and negative bus terminals of the high voltage DC source in an Inverter circuit. An active discharge circuit is connected ...

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## Design Priorities in EV Traction Inverter With Optimum ...

Apr 1, 2023 · ABSTRACT This technical white paper explores key system trends, architecture, and technology for traction inverters. The devices and technologies used to enable traction ...



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