



All



ADVANCED SEARCH

Conferences > 2022 Second International Con...

# Electric vehicle power and signal multiplexing using cascaded inverters

Publisher: IEEE

Cite This

PDF

N.V. Kishore Kumar ; N. Jayanthi ; C.S. Chaithanya ; C. Kalyankumar ; D. Harika ; G. Sravani All Authors



7 Full Text Views

## Alerts

Manage Content Alerts Add to Citation Alerts

Abstract



Download PDF

Document Sections

- I. Introduction
- II. Literature Review
- III. Multiplex Power and Signal Transmission
- IV. Simulation Results and Analysis
- V. Conclusion

**Abstract:**Transmission of communication signals across power electronic circuits is the focus of power & signal multiplex transmission (P&SMT). The electric motor, vehicle dynamics... **View more**

### Metadata

#### Abstract:

Transmission of communication signals across power electronic circuits is the focus of power & signal multiplex transmission (P&SMT). The electric motor, vehicle dynamics, and their respective controls are all part of the proposed model. Differential equations are used to explain the mathematical model of the DC/DC buck-boost converter when it is in both the boost and buck zones of operation. The proportional-integral regulator is used in the development and implementation of the control system. The typical electric vehicle (EV) communication system is more expensive to wire than the one suggested here since the proposed technique allows communication signals to be transmitted without requiring a Controller Area Network bus. In EVs, the proposed system can control motor speed while also draining the battery in a balanced manner. In a Matlab/Simulink simulation, both power and communication signals may be conveyed using a pulse width modulation technique and a frequency shift keying approach. The suggested system's maximum signal rate is 600 bit/s, as estimated by calculating the bit error rate of the sent signal.

**Published in:** 2022 Second International Conference on Advanced Technologies in Intelligent Control, Environment, Computing & Communication Engineering (ICATIECE)

**Date of Conference:** 16-17 December 2022

**INSPEC Accession Number:** 22683716

**Date Added to IEEE Xplore:** 24 February 2023

**DOI:** 10.1109/ICATIECE56365.2022.10046844

#### ISBN Information:

**Publisher:** IEEE

**Conference Location:** Bangalore, India

Authors

Figures

References

Keywords

Metrics

More Like This

N.V. Kishore Kumar

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

IEEE websites place cookies on your device to give you the best user experience. By using our websites, you agree to the placement of these cookies. To learn more, read our Privacy Policy.

Accept & Close

N. Jayanthi

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

C.S. Chaithanya

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

C. Kalyankumar

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

D. Harika

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

G. Sravani

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

## Contents

### I. Introduction

Due to climate change's concerns, scientists and researchers are looking at fossil fuel alternatives in order to lower carbon dioxide emissions. One practical approach to lowering emissions and saving money in the automotive sector today is the use of electric cars. Electric vehicles (EVs) not only reduce noise pollution but also reduce emissions of harmful gases including carbon monoxide and nitrogen oxide [1]. In addition, charging an EV's battery at night helps the grid maintain a more stable load and lower overall costs since it occurs outside of the peak demand period [2]. It is important to use an efficient technique to realise signals transfer [3] between the transmission control unit (TCU) and other subsystems in an EV, such as the motor control unit (MCU) and battery management system (BMS). Because of its high reliability and high transmission baud rate, the Controller Area Network (CAN) bus is one approach that is commonly recognised by both manufacturers and researchers as being suitable for usage in EVs for the purpose of data transfer [4]. Fig. 1.

Electric vehicle powertrain

### Authors

N.V. Kishore Kumar

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

N. Jayanthi

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

C.S. Chaithanya

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

C. Kalyankumar

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

D. Harika

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

G. Sravani

Department of EEE, Mother Theresa Institute of Engineering and Technology, A.P

Figures

References

Metrics



**More Like This**

A novel self oscillating power electronics for contactless energy transfer and frequency shift keying modulation  
2016 International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM)  
Published: 2016

A novel pure digital signal processing noncoherent receiver based on filter bank realization for frequency shift keying  
Proceedings of ICUPC '95 - 4th IEEE International Conference on Universal Personal Communications  
Published: 1995

Show More

IEEE Personal Account

Purchase Details

Profile Information

Need Help?

Follow

CHANGE  
USERNAME/PASSWORD

PAYMENT OPTIONS  
VIEW PURCHASED

COMMUNICATIONS  
PREFERENCES

US & CANADA: +1 800 678  
4333



DOCUMENTS


PROFESSION AND  
EDUCATION  
TECHNICAL INTERESTS

WORLDWIDE: +1 732 981  
0000

CONTACT & SUPPORT

IEEE websites place cookies on your device to give you the best user experience. By using our websites, you agree to the placement of these cookies. To learn more, read our Privacy Policy.

Accept & Close

[About IEEE Xplore](#) | [Contact Us](#) | [Help](#) | [Accessibility](#) | [Terms of Use](#) | [Nondiscrimination Policy](#) | [IEEE Ethics Reporting](#)  | [Sitemap](#) | [IEEE Privacy Policy](#)

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.

© Copyright 2023 IEEE - All rights reserved.

#### IEEE Account

- » [Change Username/Password](#)
- » [Update Address](#)

#### Purchase Details

- » [Payment Options](#)
- » [Order History](#)
- » [View Purchased Documents](#)

#### Profile Information

- » [Communications Preferences](#)
- » [Profession and Education](#)
- » [Technical Interests](#)

#### Need Help?

- » **US & Canada:** +1 800 678 4333
- » **Worldwide:** +1 732 981 0060
- » [Contact & Support](#)

[About IEEE Xplore](#) | [Contact Us](#) | [Help](#) | [Accessibility](#) | [Terms of Use](#) | [Nondiscrimination Policy](#) | [Sitemap](#) | [Privacy & Opting Out of Cookies](#)

A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.

© Copyright 2023 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.

IEEE websites place cookies on your device to give you the best user experience. By using our websites, you agree to the placement of these cookies. To learn more, read our [Privacy Policy](#).

Accept & Close