PROPULSION SYSTEM

1. Introduction

The propulsion system consists of dual 4-Quadrant Direct Drive using two PMSM (Permanent Magnet Synchronous Motors) coupled to the shafts of front and rear wheels. The motors (EMRAX) are controlled by using digital 3-phase servo amplifier (BAMOCAR). The electronic commutation is achieved using position feedback from the motor mounted resolvers. The BAMOCAR is fed by 500VDC from battery pack for powering the motors and 12VDC from auxiliary battery for powering the electronics. The subsystems communicate via CAN bus and the Texas Instruments Hercules Board acts as the CAN Master. It also sends the necessary control signals for enabling the BAMOCAR and the Electro-Mechanical Brakes. The BAMOCAR can be calibrated/tested offline from the N-Drive Graphical User Interface running on a PC/Laptop. The system also implements safety interlocks using temperature data from the motors and BMS (Battery Management System).

2. Context Diagram