

# TheMotion | TheControl

## Powertrain Control Module

intelligent electronic integration



### Technical Specification

Revision: 1.2  
Date: 09/2019

#### Content

1	Intended Use.....	2
2	Highlights.....	2
3	Features.....	2
4	Technical Data.....	3
5	System Layout.....	5
6	Mechanical Design.....	6

## 1 Intended Use

- To be used as a Powertrain Control Module for electric buses, trucks or other electric vehicles equipped with a TheMotion in-wheel motor electric powertrain

## 2 Highlights

- Developed to control direct-drive in-wheel motors within electric vehicles
- Equipped with a series of distinctive functionalities including an electric differential functionality, different state-of-the-art protection functionalities and a power control algorithm
- TheControl PCM allows for integration in any common CAN J1939 vehicle CAN-bus system including retrofit
- The PCM supplies relevant system data, which the OEM can display on the vehicle dashboard
- AUTOSAR based software platform
- Full diagnostic capabilities
- Performance monitoring
- Safety features

## 3 Features

- Torque Control of in-wheel motors (up to 8 motors)
- Cruise control
- Electric differential
- Retarder lever integration
- Seamless integration with braking systems
- Optimal brake blending strategy
- Extensive diagnostic capabilities
- Detection and control of safety hazards
- Flexible software by parameter calibration
- Robustness for automotive environment

## 4 Technical Data

### Specifications

TheControl Powertrain Control Module	
Product-line	TheMotion
Product ID	TheControl (PCM)
Product Type	In-wheel motor powertrain control unit
Technical Specifications	
Hardware	
Processor	32-bit Dual Core Lockstep
Interfaces	2x 53-pin + 1x 48-pin
CAN protocol	3x (CAN 2.0 11898)
I/O	Both analog/digital
General specifications	
Operating voltage	8 - 32 [VDC]
Idle current consumption	2.8 mAdc @ 24 [VDC]
Operating temperature	-40 [°C] to 85 [°C]
Shock endurance	Shock and vibration proof
Safety aspects	UNECE R10 Designed according to ISO 26262 principles
Ingression protection	IP6K9K
Dimensions and Boundaries	
Dimensions	233 x 151 x 55 [mm]
Weight	1411 [g]
ECU Housing	Aluminum housing with automotive vent designed for harsh automotive environments.
Compliance	
Quality Management System	ISO 9001:2015 TÜV Approved

System Overview

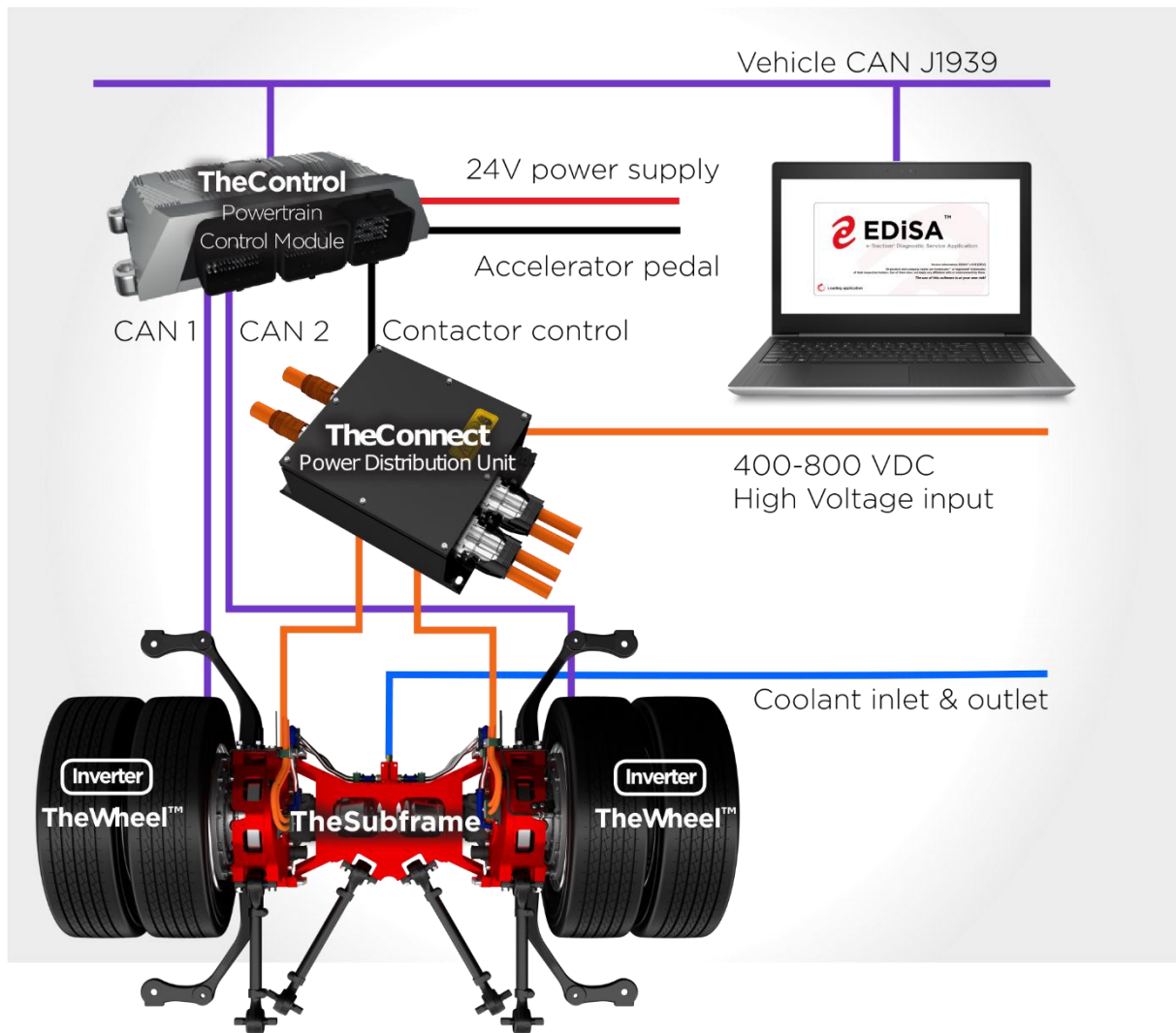
*Appearance Impression*



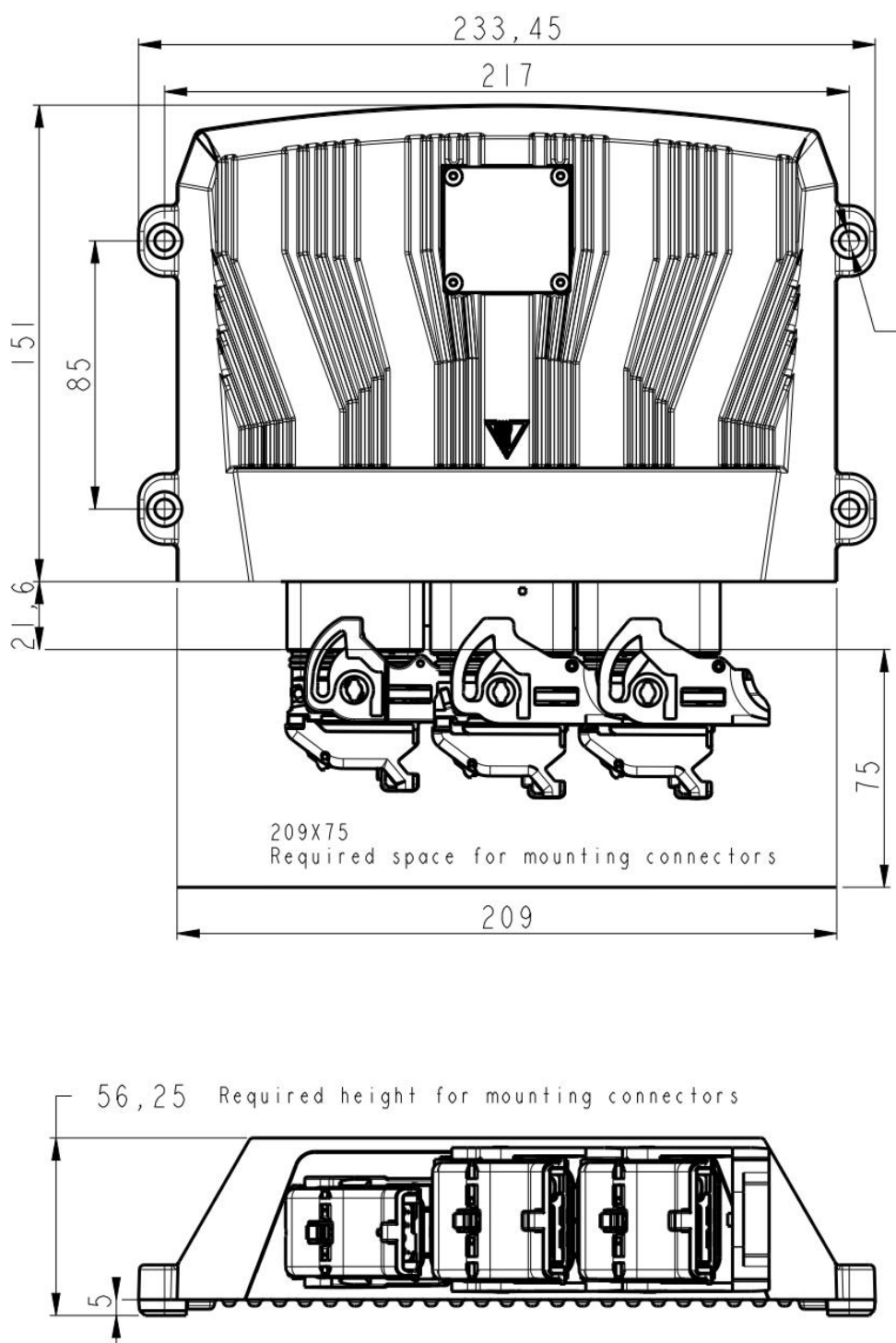
Product Accessories

- ✓ Product Manual

## 6 System Layout



## 7 Mechanical Design



## A long history of proven technology

Founded in the Netherlands in an inventor's workshop, e-Traction offers bespoke solutions and superior technology in e-mobility that are based on solid expertise and hard-won experience.

Since 1981, we have developed electric traction technology, evolving to unique, award-winning, electric in-wheel powertrain technology. With our sustainable, integrated technology, only a bare minimum of components is required to reach the highest efficiency level. The simplicity of our drivetrain is the ultimate sophistication for full electric and hybrid vehicles.

By creating the most energy efficient electric powertrain solutions, environmental impacts, energy consumption and costs of ownership of mobility are lowered substantially. e-Traction develops, realizes and implements superior, distinguished and patented powertrain technology in e-mobility.

e-Traction is convinced that teaming up with the customer is the most efficient way to achieve the perfect solution. We offer development, implementation and services in a dedicated working method and also participate in prototype and demonstration projects.

“e-Traction and their next in-wheel motor technology platform offers a revolution in motion.”

**e-Traction**

Watermanstraat 40  
7324 AH APELDOORN  
The Netherlands  
Telephone +31 (0) 55 521 11 11  
Mail [info@e-traction.com](mailto:info@e-traction.com)  
Web <http://www.e-traction.com>

© 2019 e-Traction Europe BV

The copying, distribution and utilization of this document as well as the communication of its contents to others without expressed authorization is prohibited. Offenders will be held liable for the payment of damages. All rights reserved in the event of the grant of a patent, utility model or ornamental design registration.

e-Traction is Quality Certified ISO 9001:2015

