

# **TheMotion | TheWheel™**

## In-Wheel-Motor Technology driving innovation forward



### Technical Specification

Revision: 1.1  
Date: 05/2019

#### Content

1	Intended Use.....	2
2	Highlights.....	2
3	Features.....	2
4	Technical Data.....	3
5	System Layout.....	6
6	Mechanical Design.....	7

## 1 Intended Use

- High efficiency direct drive electric in-wheel motor

## 2 Highlights

- Permanent magnet synchronous machine
- Integrated high voltage inverter

## 3 Features

- High peak torque of up to 20.000 Nm per driven axle
- Twin-tire solution
- Pure direct drive efficiency up to 94% (battery to wheel)
- No energy consuming gears and differentials
- Easy connectable
- Fit and forget approach as minimal maintenance is needed
- Designed according to Functional Safety (ISO 26262) principles

## 4 Technical Data

### Specifications

TheMotion   TheWheel™		
Product-line	TheMotion	
Product ID	TheWheel™	
Product Type	Permanent Magnet Synchronous In Wheel Motor	
Functionality and key features		
Intended Use	In Wheel motor for heavy duty Automotive applications.	
Control topology	4-quadrant control	
Technical Specifications		
Electrical performance		
Minimum operation voltage	400 [VDC]	
Performance voltage range	520 - 800 [VDC]	
Nominal operation voltage	650 [VDC]	
Peak operating DC current	560 [A]	
Continuous DC current	355 [A]	
Mechanical performance		
Operating speed range	0-500 [rpm]	
Operation over speed	550 [rpm]	
Peak output torque	10.000 [Nm] duration 30 [s]	
Startup torque	10.000 [Nm]	
Continuous torque	3.900 [Nm] duration 30 [min]	
Peak output power	DC link voltage	650 [V]
	Transient 30 sec.	204 [kW]
	Continuous > 30 min.	126 [kW]

<b>Cooling</b>	
Operational coolant temperature	-25 [°C] to 65 [°C]
Coolant medium	Water/Glycol 50/50
Coolant flow (typical)	30 [l/min] per in-wheel motor
<b>Environmental conditions</b>	
Operating temperature	-40 [°C] to 65 [°C]
IP rating	IP6K9K
<b>Compliance</b>	
Quality Management System	ISO 9001:2015 TÜV Approved
Production Control	Conformity of Production Certified Production Location  Designed to comply to GB/T 18488:2015
<b>Dimensions and Boundaries</b>	
Dimensions	Ø505 x 778 [mm]
Wheel mass	465 [kg]
Maximum load per wheel	6.500 [kg]
Rim/Tire type	2x 275/70 R22.5 or 1x 455/45 R22.5
Connections	DC connector (2 pins) Coolant inlet Coolant outlet CAN bus connector Electrical ground
<b>Compliance</b>	
Quality Management System	ISO 9001:2015 TÜV Approved

System Overview

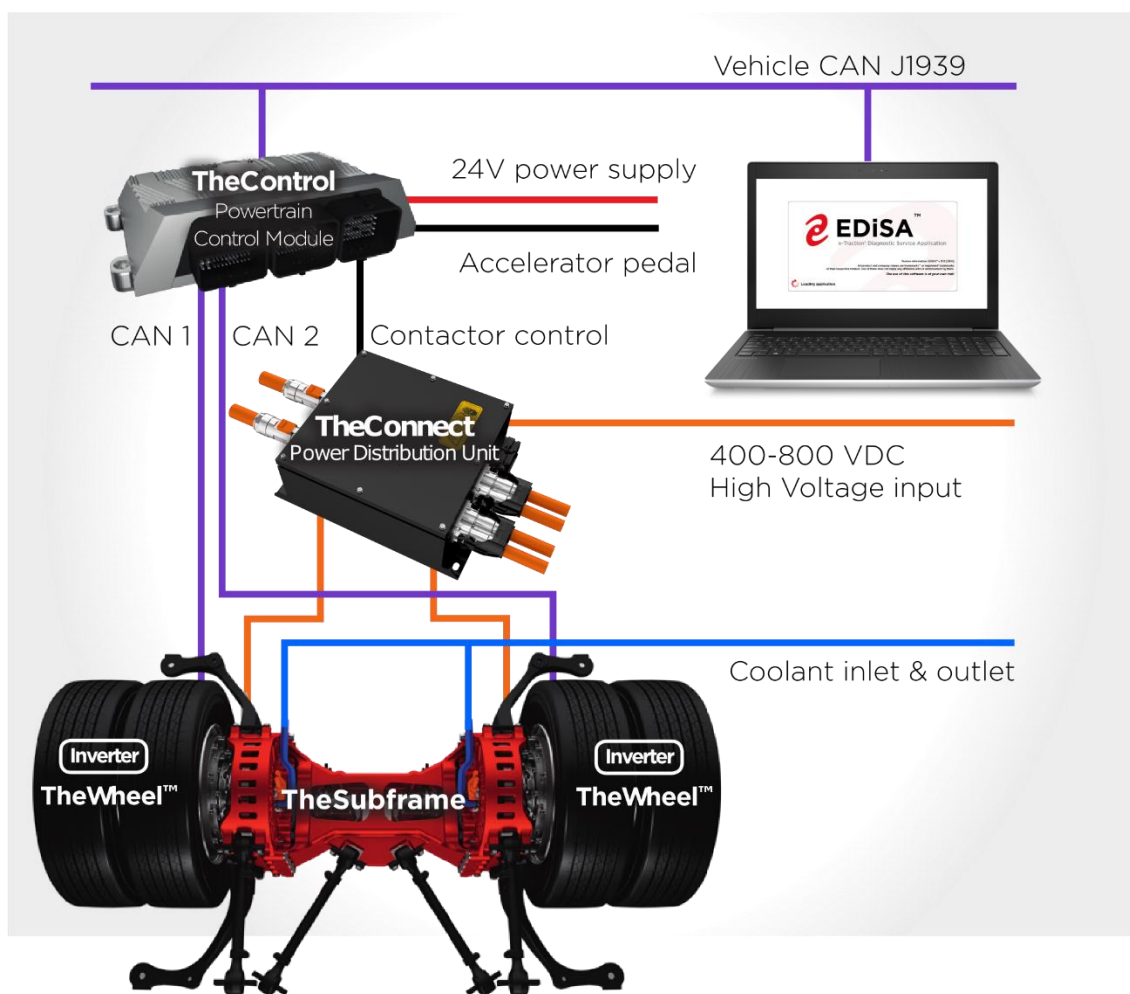
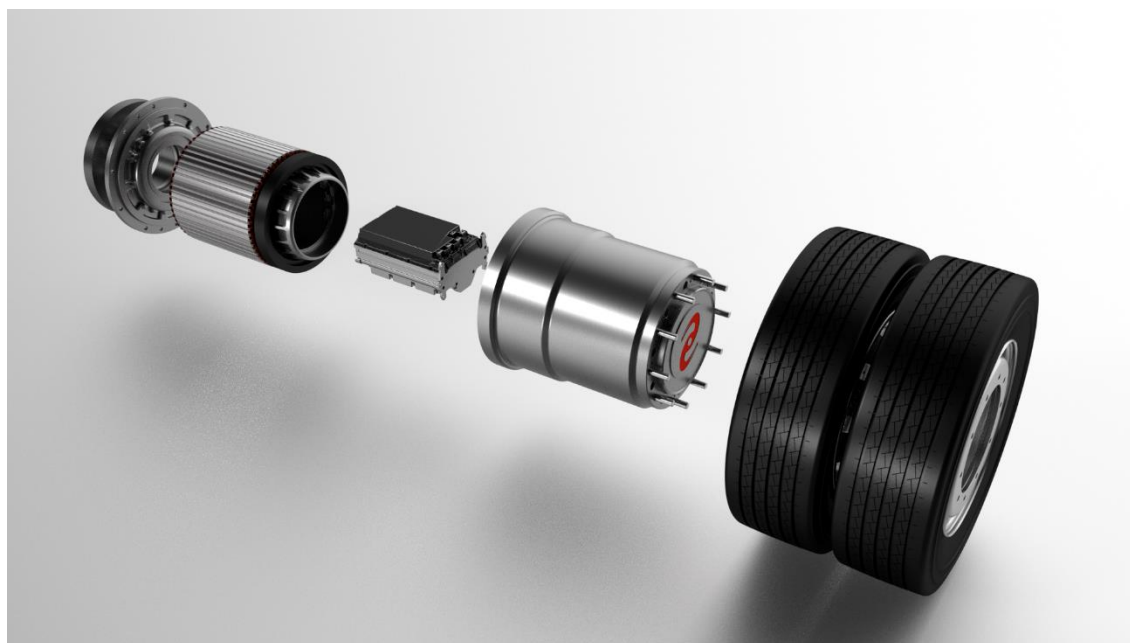
*Appearance Impression*



Product Accessories

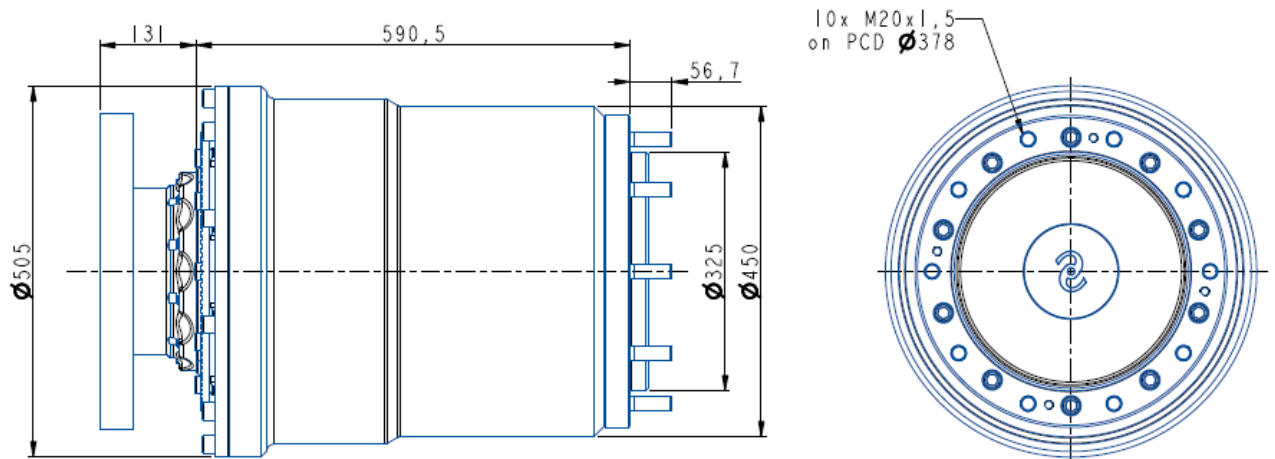
- ✓ Product Manual
- ✓ Inner Rim
- ✓ Outer Rim

## 5 System Layout



## 6 Mechanical Design

General dimension, detailed information available on request



## 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

