

TheMotion | TheWheel™

In-Wheel-Motor Technology
driving innovation forward



Technical Specification

Revision: 1.2
Date: 09/2019

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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] |

| | |
|---------------------------------|---|
| Cooling | |
| Operational coolant temperature | -25 [°C] to 65 [°C] |
| Coolant medium | Water/Glycol 50/50 |
| Coolant flow (typical) | 30 [l/min] per in-wheel motor |
| Environmental conditions | |
| Operating temperature | -40 [°C] to 65 [°C] |
| IP rating | IP6K9K |
| Compliance | |
| Quality Management System | ISO 9001:2015 TÜV Approved |
| Production Control | Conformity of Production Certified Production Location Designed to comply to GB/T 18488:2015 |
| Dimensions and Boundaries | |
| 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 |
| Compliance | |
| Quality Management System | ISO 9001:2015 TÜV Approved |

System Overview

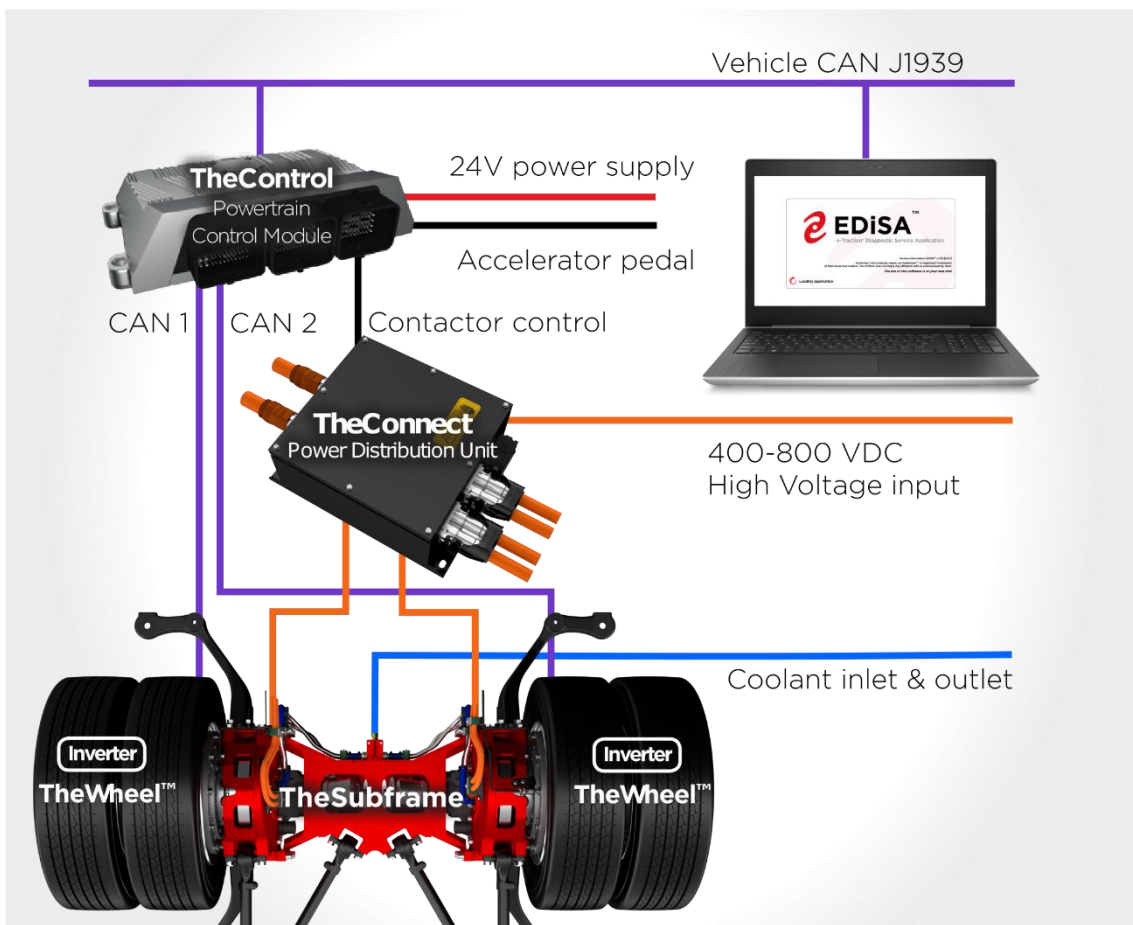
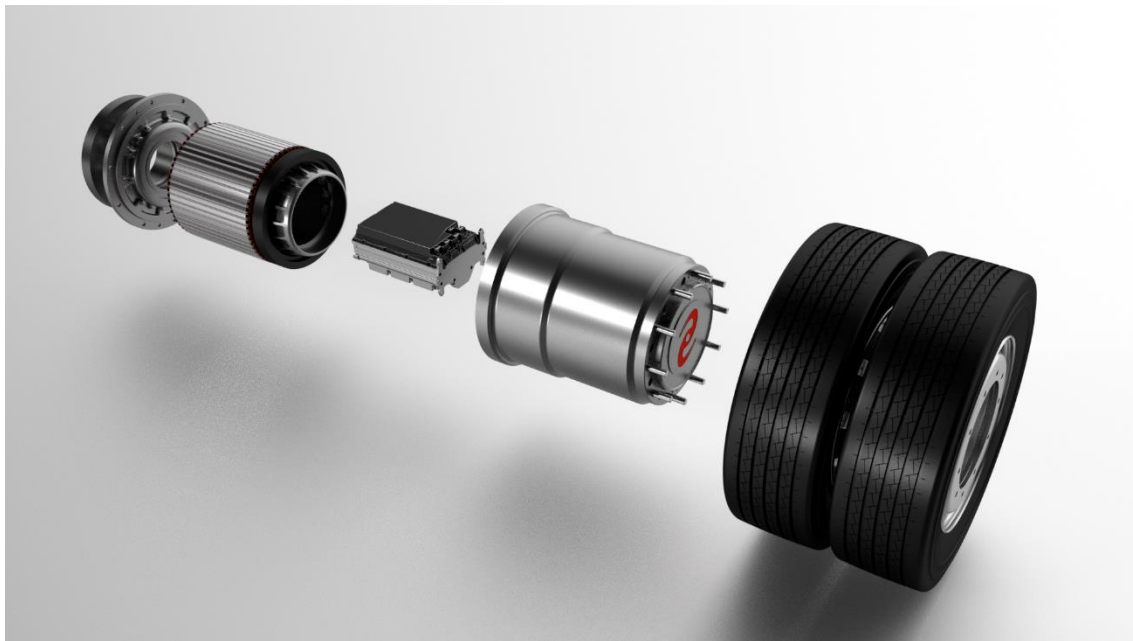
Appearance Impression



Product Accessories

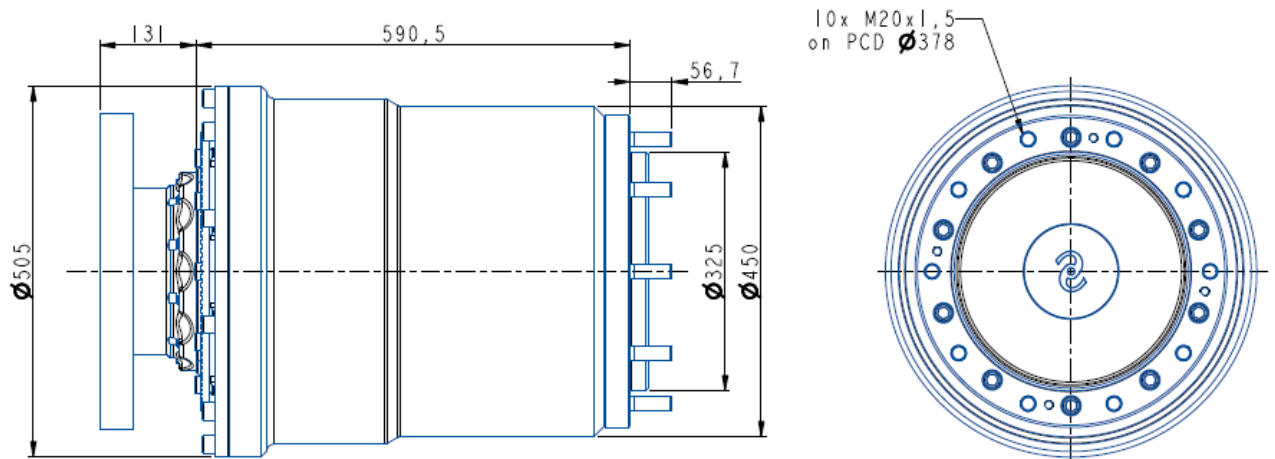
- ✓ Product Manual
- ✓ Inner Rim
- ✓ Outer Rim

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

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