The Motor Controller is the most important element in the e-bike electronic system and is fully responsible for the system performance. It processes sensor information and manages the power that the motor needs to supply, depending on them. We have developed our "SMART MOTOR CONTROL" using all the experience and knowledge of the leader Automotive Group Nagares just to give market response to the demand of High Level solutions, fully customizable and with open system to be integrated in quality e-bike systems. Based in CAN BUS can process the inputs and supply fast response adopting different customizable motor maps for each power level. Full designed and produced in Europe to give the best quality with the best price.

The Ebikemotion® Technologies Brushless controller is suitable for 48 volts and 36 volts brushless sensored motors that are used in electric bikes. The system works with brushless motors that include Hall sensors. The Design is based on a Dspic33EP 16 Bit Microcontroller that implements a 3 phase sensored control solution using a six-step commutation process, that includes a closed-loop speed control and a current limitation. The circuit also includes an E523.50 3x Half bridge driver that is suitable within a supply voltage range from 12 V to 72 volts. The controller integrates a high speed CAN bus, that could be used to communicate with external LCD Displays, Smart BMS Or other devices and two serial interfaces that could communicate with devices that works with other protocol. An USB host interface is also implemented.

Target Applications:
- BLDC Motors in electric bicycles
- HUB Motors with External Controllers
- MID DRIVE or HUB Motors with build in Controller

Double Level Concept (Power+Control)

The power level (MOSFET) is fully separated of the control board. That leaves us to create different configurations for different markets and power requirements.
Product Features and Specifications

- 3-ph 48 volts or 36 volts brushless motors
- Up to 250/350 Watt Motors
- DSPic33EP 16 bit microcontroller
- Elmos E523.50 Driver
- Motor current measurement
- Sensored control using hall sensors
- DC bus overvoltage, undervoltage and overcurrent fault detection
- 5 Volts 500 kbauds High speed CAN
- 2 Serial to TTL Interfaces
- USB host Interface
- In-Circuit and In-Application Programming CAN/USB
- External EEPROM (Store customization data)
- 6 volts (0.4 Amperes) Accessories switchable output
- 6 volts (0.8 Amperes) external Lights switchable output
- 12 volts (2.0 Amperes) Accessories switchable output
- 4.3 Volts Supply for the external sensors be means of a voltage tracker.
- 2 active sensors (torque and throttle) input with open load detection
- 3 digital sensors (speed, PAS and Brake) input with open load detection
- Activation switch be means of a pull up configuration. It has to be switched by pulling the line to ground
- Board temperature measurement close to the 3 half bridges MOSFETs
- Up to 205/350 Watt Motors (more power check)
- EN 15194 - DIN EN ISO 13849 - According to Directive 2006/42/EG
- In-APP full customization of Maps, Limits, Response, Power Supply and user feeling.
- IP67 Waterproof

Special Controller Features integrated in ebikemotion APP

Technical view

This is the standard size of the controller. But the layout and shape could be adapted for customers requirements.

Dimensions Box:
- Lenght: 64.5 mm
- Height: 26.6 mm
- Width: 63.0 mm
- Weight:

Dimensions PCB:
- Lenght: 59 mm
- Height:
- Width: 59 mm
- Weight: