- seat switch open check with delay time;
- battery Discharged Indicator with adjustable reset value;
- over temperature protection for inverter and motor;
- low and high battery voltage limit;
- speed feedback;
- hill hold;
- standby for supply;
- diagnostics and stored fault code;
- mains fault detection (fuse/contactor);
- continuous temperature measuring (controller and motor);
- short-circuit protection.

8.4.4 ITC characteristics

The system developed by SME allows the OEM to get high performance, thanks to the following specific features:

- DSPs high performance control with custom software, loaded in the internal FLASH memory;
- one serial asynchronous RS-232 interface for PC communication in order to obtain:
  - parameters modification, in order to customise the system;
  - diagnosis functionalities;
  - software updates;
- one throttle (0-12V) and all on/off emergency micro-switches interface;
- one encoder (0-5V) interface for the motor;
- motor torque control by speed and current loop;
- controlled acceleration and deceleration rates of the motor;
- automatic traction speed limitation depending on steering angle;
- controlled stop of the vehicle;
- automatic energy recovery during braking;
- LIN (Local Interconnect Network) display interface;
- automatic vehicle speed limitation by digital and analog inputs;
- full protection of drives against motor over current, power transistors overheating and both maximum and minimum battery voltage;
- low maintenance costs by using AC induction motors;
- a CAN network, which can be used to build more complex control systems with other control boards or to connect particular kinds of sensors or devices, giving further flexibility.

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