

ELECTRONICS CONTROL UNIT

An Electronic control unit is any embedded system in automotive electronics that controls one or more of the electrical systems or subsystems in a vehicle some modern motor vehicles have up to 80 ECUs

❖ Types of ECUs include:

- Door control unit (DCU)
- ENGINE control unit
- Electric power steering control unit
- Human machine interface
- Power train control module

Sometimes the functions of the engine control unit and transmission control unit are combined into a single unit called the powertrain control module.

- Seat control unit
- Speed control unit
- Telematic control unit
- Transmission control unit
- Brake control module
- Battery management system

❖ Key elements:

- Core
 - ✓ Micro controller
- Memory
 - ✓ SRAM
 - ✓ EEPROM
 - ✓ Flash
- Inputs
 - ✓ Supply voltage

- ✓ Digital inputs
- ✓ Analog inputs
- **Outputs**
 - ✓ Relay drivers
 - ✓ H bridge driver
 - ✓ Injector drivers
 - ✓ Logic outputs
- **Communication links**
 - ✓ Housing

❖ **Design and development:**

Development of an ECU involves both hardware and software required to perform the functions expected from that particular module.

Automotive

ECUs are being developed following the v-model. Recently the trend is to dedicate a significant amount of time and effort to develop safe modules by following standards like ISO 26262.

The development of most ECUs are carried out by Tier 1 suppliers based on specifications provided by the OEM.

❖ **TESTING AND VALIDATION:**

AS part of the development cycle, manufacturers perform detailed FMEAs and other failure analyses to catch failure that can lead to unsafe conditions or driver annoyance

Extensive testing and validation activities are carried out as part of the production part approval process.

Onboard diagnostics help provide specific data related to which system or component failed or caused a failure during runtime and help perform repairs.

❖ **ELECTRONICS CONTROL IN GTC₄ LUSO:**

SSC₄/CST with F1 TRAC,ESP
9.0 Premium with ABS EVO/SCM-E

NOVITEC N-TRONIC is a processor-controlled device to be connected to the original engine management with the delivered plug & play wiring harness. It offers 89 HP gain. The kit includes two NOVITEC N-TRONIC modules. It is ready to mount plug and play system and it is easy to install.

Presented by
Vamsi.