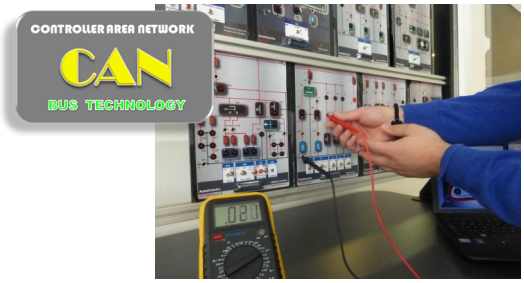
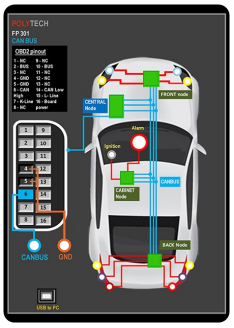
FP 311 Trainer/Simulator

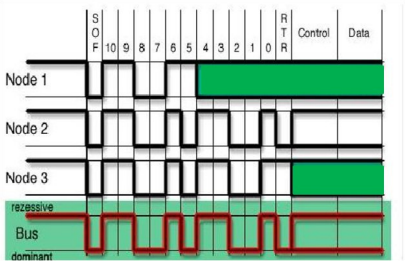
CAN BUS Simulator

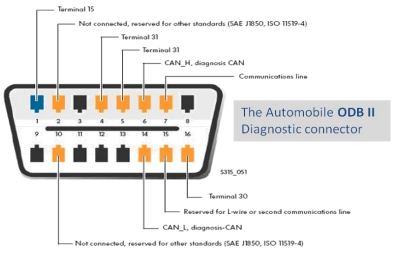


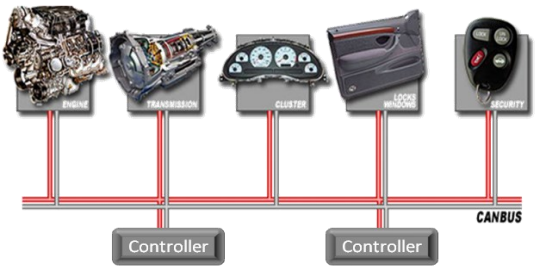


The Autotronics **CAN-BUS trainer/simulator** is focused on the development of understanding the CAN-BUS technology, the data network of a CAN-BUS basic operation in a simulated environment, its performance and operation as well as to develop diagnostic and fault-finding skills. Teachers can set tasks that encourage students to explore how the CAN-BUS network is used on modern automobiles.
The FP311 module is **part of the FP300 series trainers and modules**, a set of Polytechs' simulation electronic blocks, which demonstrates, simulates and trains students in the **Autotronic technologies** incorporated in a **modern car** and its various sub systems. The FP300 series of simulation boards includes different modules of simulators (blocks) covering all electrical systems of a car, including analogue and digital sub systems. One of these offered Autotronics simulation modules is the **FP311 CAN BUS** module.

In a modern automotive, each sub-unit or sub-system is controlled by its own Control Unit. A special local area network that is called **CAN** (**C**ontroller **A**rea **N**etwork), interconnects those control units. The network is an open architecture network, which means that every control unit can "talk" with any of the other control units.







FP311 block is the simulation unit of the FP300 series which introduces the students to the basics of the CAN-BUS architecture. As all FP300 series modules, is a **combined Simulator and Trainer**, meaning that the student can simulate the electrical signals and measure them using the FP300 application software while also measure actual signals on the trainer boards of FP300 series**. FP311 is supplied as a stand-alone simulator.**

FP 311 Simulator

FP311s' didactic purposes is to simulate the function and performance of the CAN-BUS architecture in 4 subsystems and the CAN-BUS communication system between their control units, in order to understand this modern Autotronics technology, used by all major automotive manufacturers.

The simulator can be used with any Teacher Personal Computer having Windows 8 or higher or equivalent brand operating system.

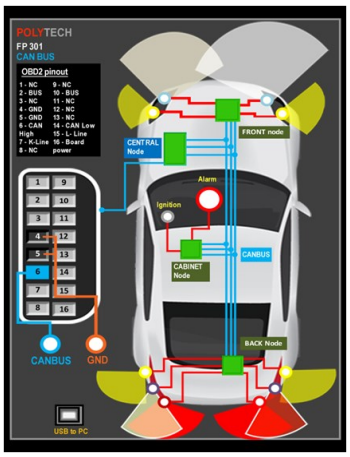
Simulator Dimensions / Weight

Dimensions: 480 x 275 x 150 mm
Weight : 500gr

FP 311 Trainer/Simulator

CAN BUS Simulator

FP311 comprises of a pre-assembled block in a metal cabinet having a colored top surface with relevant diagrams, drawings, terminals and components. The controller integrated in the module, controls the various component functions and enables the operation of the trainer in conjunction with the software application and the PC workstation. The block can be installed on the FP300T bench, the student FP300ST console or can operate as stand alone module.



The FP311 CAN-BUS module contains a complete CAN-BUS network of **4 autotronic** sub-system nodes:

- Engine **ignition control** CAN-BUS.
- Front CAN-BUS node to control the **front** lighting system (head running and low lights, high beam, signal lights).
- Rear CAN-BUS node to control the **rear** lighting system (brake light, reverse light, rear alarm lights, fog light, real lights ignition and running, rear signal and parking).
- Alarm CAN-BUS node to control **proximity alarm sensor** with sound alarm and ignition ON/OFF light.

The FP311 module includes a CAN-BUS signal measuring terminal emulating the automobile **ODBII CAN-BUS HI** signal and the ground terminal. The ODB sensor simulates the output of the Central EMC unit of the car to the normal diagnostic sensor in the cabinet. On these 2 terminals, the students can take digital signal measurements by using a storage oscilloscope (optional).
The FP311 module is connected by USB cable to the PC workstation which runs the CAN-BUS basic simulation offering simulating, testing and measuring the Can Bus signals for different control modes of all the above functions.
The simulator application offers a **car dash board simulation** with typical light and alarm controls so the students can simulate the control of those subsystems by mouse clicks. The system besides the signal display, offers **hex and decimal coding** and scanning screen to present the data signaling in the CAN BUS.

Additionally, the application contains a simulated **high resolution digital storage oscilloscope** with **logic analyzer** to measure electrical levels of CAN-BUS. The students can use external oscilloscope measurements too. Signals can be measured by a high resolution Lab Oscilloscope from the terminals on the FP 311 board.

The measured data is stored and transferred to the connected PC to show them in an oscilloscope view.
Furthermore, the data is inserted in a fully described CAN-FRAME monitoring simulation system and give a complete setting, testing and reading values in a **CAN-FRAME** format displaying **CAN-BUS HI** and **CAN-BUS LO** signals or **CAN-DATA** format.
The instructor can configure the FP311 in multiple ways and create exercises and training scenarios for the students.

Theory includes introduction to digital electronics and logic, Can Bus architecture, Basic communication and signaling for the simulated CAN BUS lighting control system. The system allows fault simulation of the CAN BUS systems, CAN BUS signal diagnostics and troubleshooting.