



Transmission Simulator

Overview

DGE's Transmission Simulator provides all necessary inputs, outputs, and actual loads to perform real time testing of transmission controllers. It allows development engineers to test new hardware and software before integrating it on a real vehicle.

A Graphical User Interface (GUI) gives the user full control over all functions and parameters. Once set up with the GUI, the tester can be operated without the PC in a stand-alone mode. This mode of operation may be useful for screening modules where only one configuration is needed.

Architecture

The Transmission Simulator is based upon the National Instruments eight-slot PXI system and LabView Real Time with FPGA extensions. The system contains a 1.2GHz Pentium III PC and I/O required to communicate with a transmission or dual function engine/transmission ECU. The unit can test up to 96 input or output pins plus additional power supply pins across a range of 0 to 20 Volts and 0 to 5 Amps. The Transmission Simulator GUI runs on a standard PC under Microsoft Windows 2000 or XP. The main unit contains one load for a standard transmission.

The user can save and restore configurations. Adjustments to settings may be made via the PC's mouse or keyboard, or through the separate encoders and switches on the I/O Box. The I/O Box provides momentary switches and optical encoders to modify signals. An array of LEDs (not shown) displays the states of the switches, solenoids and other pertinent information.

In addition to the PXI system, a custom interface board was designed to complete the remaining I/O and connections required to communicate with the ECU. The Transmission Simulator supports both J1850 and CAN vehicle buses.

All of the pins on the controller can be conveniently probed by external test equipment, such as a scope, or individually disconnected for signal injection into the module by bypassing the tester.



Key Features

Three additional internal real solenoid loads can be added to the system. These are selectable by simply connecting the supplied cable from the Solenoid Select connector to the desired solenoid connector.

Four J1962 diagnostic connectors are available to the user. The first set labeled J1962 is software selectable between J1850 and CAN standard pinouts. The second set labeled CAN2 supports configuration "B" only. These have been wired with a second CAN port for future ECU development.

Future Upgrades

The Transmission Simulator has been hardware-enabled to communicate with other testers and simulators.

A playback feature will allow the user to play road profiles and make the debugging process simpler. A software scripting feature will allow the user to create scripts to control test parameters.

Included Components

- Main Unit
- PC with LCD Display
- I/O Box
- All Required Cables
- LED Box
- Detailed Users Manual

DGE Inc.