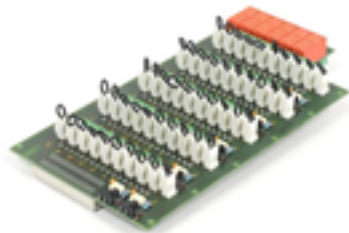


dSPACE DS685

## Mid-Size Midplane Board



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**dSPACE Simulator Mid-Size is a closed-loop hardware-in-the-loop simulator with the following features :**

- *Support signal conditioning*
- *Support providing equivalent or real load to ECU*
- *Failure simulation*
- *Two-voltage system supports remote control power supply*

The host needs to be equipped with a link board - Link Board for bus interface connection. dSPACE provides 3 different types of Link Board to match the different bus types of the host (with ISA/PCI/PCMCIA interfaces). The bus interface is used to download the real-time **model to the simulator** and control the simulation process. *The host and simulator use the RS232 serial port to control the fault injection unit (FIU).*

**dSPACE Mid-Size simulation consists of the following components :**

- *Processor board DS1005/DS1006*
- *I/O Board DS2211/DS2202*
- *Link Board DS814*
- *Load/FIU units: 5 DS790 load cards, each card contains 10 channels, can be configured with low-power resistive or inductive loads; 5 DS791 fault injection units, each unit contains 10 channels, can be configured with low-power resistive or inductive loads*
- *A DS686 Backplane*
- *A DS685 Midplane*
- *Remotely controllable power supply unit*

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### **DS1006 Processor Board**

*The DS1006 Processor Board is based on a single-core or a multicore AMD Opteron™ processor. This real time processor (RTP) is the main processing unit. It can access modular I/O boards via its PHS bus. It is multiprocessing-capable via the (optional) DS911 Gigalink Module.*

*The DS1006 processor board is based on a single-core or multi-core AMD Opteron™ processor. This Real-Time Processor (RTP) is the main processing unit. It can access modular I/O boards through its PHS bus. It achieves multi-processing capabilities through the (optional) DS911 Gigabit Link Module.*

### **DS2211 I/O Board**

*The DS2211 HIL I/O Board is tailored to simulate and measure automotive signals. It combines a variety of typical HIL I/O functions on one board. The board also contains signal conditioning for typical signal levels of 12 V and 42 V automotive systems.*

*The DS2211 HIL I/O board is tailored for emulating and measuring automotive signals. It combines various typical HIL I/O functions on a single board. The board also includes signal conditioning for typical signal levels of 12 V and 42 V automotive systems.*

### **DS4302 CAN Interface Board**

*The DS4302 CAN Interface Board allows data transfer between dSPACE real-time systems and various other control units via 4 CAN bus interfaces.*

*The DS4302 CAN Interface Board allows data to be transferred between dSPACE real-time systems and various other control units via four CAN bus interfaces.*

### **DS4505 & DS4340 & DS4342**

The DS4505 Interface Board together with different interface modules allows data transfer between **dSPACE** real-time systems and various other control units:

- *Via FlexRay bus by means of DS4340 FlexRay Interface Modules*
- *Via CAN bus by means of DS4342 CAN FD Interface Modules*

The DS4505 Interface Board, together with different interface modules, allows data to be transferred between dSPACE real-time systems and various other control units:

- *Select the DS4340 FlexRay interface module to support FlexRay bus communication*
- *Select the DS4342 CAN FD interface module to support CAN FD bus communication*

## DS790 Load Card

dSPACE Simulator Mid-Size is equipped with five low-power load cards (DS790 Load Card) with the following characteristics:

- 10 single-ended loads or 5 double-ended loads per card, or mixed
- 2 W maximum continuous power per load
- 50 W maximum continuous power per load/FIU unit
- 6 A maximum load current
- LED indicators displaying current load states, battery voltage and switched voltage
- Front panel for measurement or connection of real loads

The dSPACE Mid-Size Simulator is equipped with five low-power load boards (DS790 Load Boards) with the following features:

- 10 single-ended loads or 5 double-ended loads per card, or mixed loads
- Each load supports 2 W maximum continuous power
- Maximum continuous power per load/FIU unit is 50 W
- 6 A maximum load current
- LED indicators showing current load status, battery voltage and switch voltage
- Front panel for measuring or connecting actual loads

Loads are installed on the load cards inside the simulator or plugged to the panel on the front of the simulator. Inside the simulator there are load sockets that the loads can be connected to. One load **socket** connects the load to the **ECU** channel, the other load socket connects the load to a high rail or to the adjacent channel (for double-ended loads).

The loads are mounted on a load card inside the simulator, or plugged into a panel on the front of the simulator. Inside the simulator, there are load sockets that the loads can be connected to. One load socket connects the load to an ECU channel, and the other load socket connects the load to a high rail or adjacent channel (for double-terminal loads).

## DS791 Failure Insertion Unit

A Load/FIU unit is equipped with 5 failure insertion units (DS791 FIU) with the following characteristics:

- Support of 50 ECU pins in total (each DS791 Failure Insertion Units (FIU) have 10 channels.) Failure simulation
- for ECU outputs (Channels are directly connected to the pins of the ECU 1 connector, which contains the signals for the ECU outputs)
- Remote control using Control Desk's Failure Simulation module
- Simulation of short circuits:
  - Short circuits from one or more ECU pins to ground or battery voltage via fail plane 1 or fail plane
  - Short circuits between two or more ECU pins via fail plane 1 or fail plane 2
- Cable break simulation
- Simultaneous simulation of multiple failures
- 6 A maximum load current

The load/FIU unit is equipped with 5 Fault Insertion Units (DS791 FIU) with the following features:

- Supports fault simulation for a total of 50 ECU pins (10 channels per DS791 Fault Insertion Unit (FIU))
- For ECU output (channels are directly connected to the pins of the ECU 1 connector, which contains the signals output by the ECU)
- Remote control using the fault simulation module of ControlDesk
- Short circuit simulation:
  - Short one or more ECU pins to ground or battery voltage via the fault panel
  - Short circuit between two or more ECU pins

- *Open circuit simulation*
- *Simulate multiple faults simultaneously*
- *Maximum load current 6 A*

The DS791 FIUs are connected to the ECU 1 connector and the DS685 Midplane.

The DS791 FIU connects to the ECU 1 connector and the DS685 backplane.

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