

PRODUCT OVERVIEW

The Dynamic Load Module (DLM) is an electronic equipment that behaves as a controlled DC load. Though this module has been developed for the automotive sector to help in the development, validation and manufacturing departments, it is also suitable for other markets where load current should be characterized.

The DLM1610D is based on internal power semiconductors to set the load operating point. Thus, any load current profile can be set via CAN messages with high accuracy and at the minimum switching time.

Each module has a unique serial number (SN) for addressing purposes. This SN can be requested under a CAN command and it cannot be updated by the user. Each DLM1610D will be externally identified with this serial number codified in a bar code label.

The main application areas in any industry are:

- ▶ **Development.** As a configurable load it saves time when reconfiguring the load panels that have expired with the project.
- ▶ **Validation.** Easy reusability of load panels for Device Under Test (DUT) life cycle verification under power stress conditions.
- ▶ **EOL testing.** Test equipment simplification in regards of cost, size and complexity due to the possibility to set the required output current for the test.

APPLICATIONS

Automotive. Development and testing of electronics devices that control any DC load. Applications in development electronics, stress testing and EOL testing.

Power Supplies and UPS. Validation of power supply and UPS in any of its operating modes, such as constant current or constant voltage. Plus, it facilitates the validation of the product by stress, testing it with fast switch random current power delivery.

Photovoltaic panel strings. Possibility to characterize and overstress the PV panels and determine their I/V function.

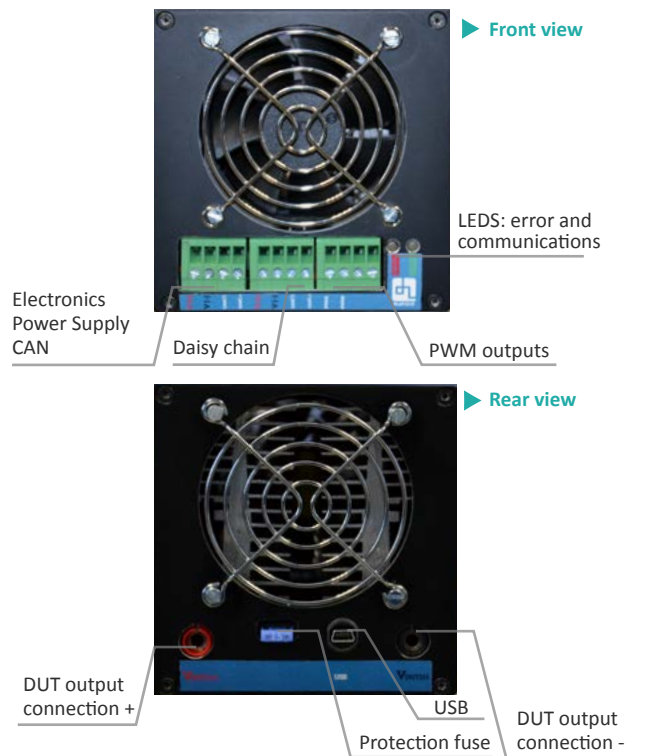
Batteries. Necessary for the development of the algorithms required to test and characterize the batteries, such as:

- ▶ Charge rate (CR)
- ▶ Discharge rate (DR)
- ▶ State of charge (SOC)
- ▶ State of health (SOH)
- ▶ Depth of discharge (DoD)

DLM1610D

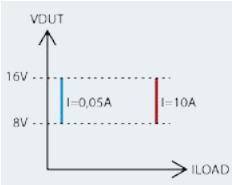
- ▶ Programmable load range between 50mA and 10A, software controlled.
- ▶ Wide power supply range (+7.0 to +16.0) to encompass any battery based automobile tests.
- ▶ Reverse polarity protection.
- ▶ All components are automotive range.
- ▶ Load Power Supply polarity independent.
- ▶ Double control option by CAN or USB.
- ▶ Ultrafast reaction time lower than 1 ms (slew rate).
- ▶ Independent power supplies for DUT and internal electronics.
- ▶ Generic user configurable waveforms, including constant current, power, voltage and resistance, sinusoidal profile, pulse and automotive life test, arbitrary and user defined waveforms.
- ▶ Automotive specific load simulations, such as bulbs with inrush current, motors with hall sensors, wipers and LEDs.
- ▶ Possibility to export captured current waveform from digital oscilloscopes.
- ▶ Scalability by parallelization of multiple DLM1610D for higher current applications.
- ▶ Real time current and voltage measurement.
- ▶ Short circuit simulation.
- ▶ Auto-diagnostics for internal circuitry and external pins (PWM outputs switching, DUT voltage and load current).
- ▶ Recalibration process for load voltage and current easy to implement by the end user.
- ▶ Size: 10x10x10cm

PRODUCT CONNECTIVITY



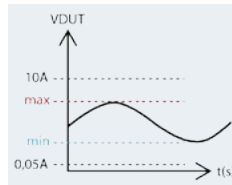
OPERATING MODES

CONSTANT CURRENT



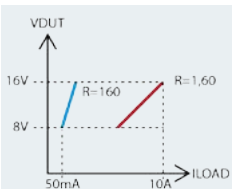
Operating mode where current is constant, whatever the voltage applied in the load is.

SINUSOIDAL WAVEFORM



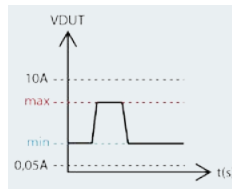
The selected variable (I, V, P or R) will simulate a sinusoidal waveform.

CONSTANT RESISTANCE



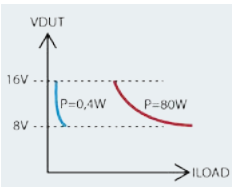
Operating mode where the current follows the ohm law ($I = V/R$).

PULSE TRAIN WAVEFORM



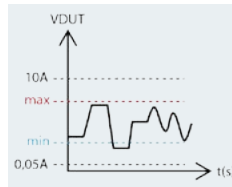
The selected variable (I, V, P or R) will follow a pulse train profile, where rising and falling times, frequency and periodicity can be configured.

CONSTANT POWER



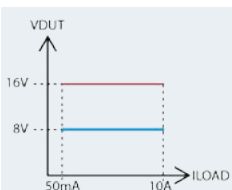
Operating mode where the current is proportional to the power on the load ($I = P/V$).

USER DEFINED WAVEFORM



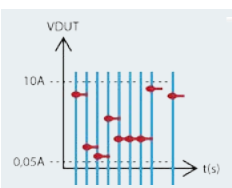
Mode specially implemented to download a text file format with the current profile a user wants to simulate.

CONSTANT VOLTAGE



By connecting an external resistor, the current is adapted to keep the voltage at DUT output constant.

RANDOM WAVEFORM



The selected variable (I, V, P or R) will randomly switch between a defined maximum and minimum values.

AUTOMOTIVE LOAD APPLICATIONS

- ▶ Inrush current simulation.
- ▶ Constant power lamps.
- ▶ LEDS.
- ▶ Heaters.
- ▶ Windshield defrosters.
- ▶ Front and rear wipers.
- ▶ Central locking.
- ▶ Washer motors.
- ▶ Stepper motors.
- ▶ Electrical fuel pumps.
- ▶ Horn.
- ▶ Power windows.
- ▶ Sun roof motor.
- ▶ Cigar lighter.