



# DG101 Four Channel Digital Delay Generator

Data Design Corporation

Gaithersburg, MD

The DG101 Digital Delay Generator is a compact PCI module designed to furnish four precisely timed outputs when triggered by an external input. Each output delay and terminal pulse width is independently programmable. Delays up to 167 ms may be programmed with one nanosecond resolution, while extremely low jitter operation makes each cycle precisely repeatable. An auto triggering feature makes the DG101 operable as a precision pulse generator. Outputs are provided by high power pin driver devices with a programmable amplitude and include a reference output for applications which must compensate for insertion delay. The trigger input threshold may also be programmed and the external clock input may be used to synchronize multiple modules. The DG101 and included software provide a turn key digital sequencing solution, while included software source code and drivers provide powerful system level integration options. Applications include laser timing, camera systems, automatic test, and radar/lidar signaling.

## Principal Features

- **1 nS delay resolution**
- **Cycle to cycle jitter less than 250 pS**
- **Programmable output amplitude of 0 to 5 volts**
- **Programmable trigger level of 0 to 5 volts**
- **External clock synchronizing option at 10 MHz**
- **Modular design for turnkey integration of high channel count systems**
- **Turnkey control panel software for Windows**

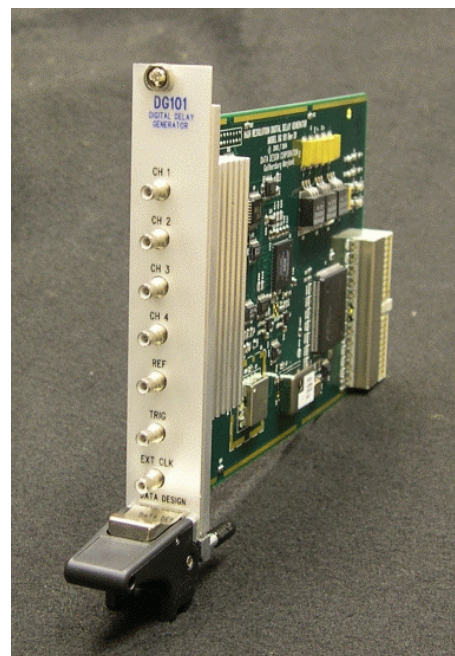
The software provides a simple method to enter delay settings and other parameters and to control operation. The control panel is designed to operate an array of DG101's from a single application. Settings for the entire array can be saved and recalled. The application coexists seamlessly with other instrument system components and can often be used as the only interface to the delay generator.

- **Fully documented API provided as a Windows DLL**

The API can be directly accessed from programming environments such as C, Visual Basic, and LabView for adaptation to a larger instrument system.

- **Software source code provided**

All software is provided with source code for the possibility of adaptation to other environments or addressing custom applications. The API is written in C and the application layer is written in Visual Basic. The source code can be helpful in understanding the API layer for adaptation to other application programming environments.





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## Specifications Summary

### Dataway Interface

Compact PCI at 32 Bits and 33 MHz  
Compliant with PICMG 2.0 R3.0  
Single Width 3U Compact PCI Card

### Resolution

Delays: 1 nS  
Width: 10 nS

### Outputs

4 Channels, 0 to 5V amplitude  
1 Reference Channel, 5V amplitude  
Sourced From 50 ohms

### External Trigger Input

Single ended DC coupled positive edge  
Programmable from 0V to 5V  
470  $\Omega$  10 pF

### Ambient Temperature Range

0 To 70 C

### Jitter

< 250pS RMS cycle to cycle  
Measured from trigger to output

### External Clock Input

10 MHz reference  
1 K $\Omega$  20 pF

## Software Features

Turnkey, out of the box operation of all instrument features in an uncluttered interface. One instance of the control panel provides operation of a full crate of DG101 modules. Settings for a full crate can be saved and recalled.

