

# Diamond<sub>x</sub> DPINg6-64

High-Value Solution for Testing Digital and Mixed-Signal Devices



The DPINg6 is an excellent high-value solution for testing digital and mixed-signal devices. The DPINg6 instrument for the Diamond Series offers full digital performance in a compact size at a very low price.

## Highlights

- Flexible timing
- Reconfigurable pattern memory
- Deep capture memory
- High-precision PMU
- Built-in time measurement
- Super voltage
- Comprehensive software tools

## Features

- 96 digital channels on a single instrument provide the high density and full set of features required for low-cost multisite testing
- Per-pin PMUs can perform precision measurements or quick go/no-go tests for the fastest production test times
- Up to 64M reconfigurable pattern memory shared between parallel vectors and scan vectors for the ultimate memory flexibility
- 32M per pin deep capture memory can be used for capturing non-deterministic digital data from ADCs or for capturing functional failures



Power Management



Consumer



Flat Panel Display



IoT/loV & Optoelectronics



Industrial & Medical



MCU



Mobility

- 96 Digital Channels per instrument
- 100 MHz clock/pattern

- Reconfigurable 64 Memory Vectors
- 12 V Parametric Measurement Unit

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## High-Value Solution for Testing Digital and Mixed-Signal Devices

### Flexible Timing

Edges and formats are per-pin programmable, and format switching and edge time set switching are allowed on-the-fly. The Dping6 supports up to 256 different format sets and 256 different period and edge time sets.

### Reconfigurable Pattern Memory

The pattern memory of the Dping6 can be divided between parallel vectors and scan vectors. Division of the memory is determined automatically at pattern load time. The adaptability of the reconfigurable pattern memory allows the user to make the most efficient use of the pattern resources. ASCII pattern format is used for maximum compatibility with EDA software environments.

### Deep Capture Memory

The 32M deep capture memory of the Dping6 instrument can be used for the testing of ADCs and other non-deterministic data sets, or it can be used to capture functional failures for online debugging or offline analysis in the EDA environment. All channels on the Dping6 have the ability to capture data.

### High-Precision PMU

Each channel of the Dping6 has its own high-speed PMU. Levels and limits are programmable on a per channel basis. The per-pin PMU feature enables extremely fast current and voltage measurements for production test.

A precision ADC is also available on each Dping6 instrument. The ADC can be connected to any channel through a convenient on-board matrix. Not only does the PMU architecture of the Dping6 promote fast test times, but the per-pin PMUs and built-in ADC matrix ensure that the user's load board

remains simple and clean.

### Built-in Time Measurement

The Dping6 has built-in time measurement capabilities. A frequency counter and an interval counter are part of the Dping6 instrument controller. An internal matrix allows routing to the frequency counter and interval counter. The high comparator of each signal determines the trigger level. Many parameters can be measured, such as pulse width, period, frequency and time differences.

### Super Voltage

Many devices require a super voltage for programming embedded flash or entering test mode. The Dping6 supplies a pattern-controlled, per-pin super voltage of up to 12 V for this purpose. This feature eliminates the trouble and expense of designing external load board circuitry to accomplish DUT programming.



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## Specifications

### Digital Pin Configurations

- Channels Per Instrument: 96
- Maximum Data Rate: 100 Mbps
- Maximum Clock Rate: 200 MHz
- Instruction Rate: 8 kHz to 100 MHz

### Digital Pin Driver

- Vih, Vil Range: -1 V to +6 V
- DC Level Accuracy:  $\pm 15$  mV
- Output Impedance: 50 ohms  $\pm 5$  ohms typical
- Edges Per Cycle: 4
- Edge Rise/Fall Time (1 V): 1 ns typical
- Edge Rise/Fall Time (3 V): 1 ns typical
- Minimum Pulse Width: 2.5 ns
- Drive Level Programming: Independent high & low per pin
- Minimum Voltage Swing: 200 mV
- Super Voltage Per Pin: 12 V
- Pattern Trigger Capability: Supported

### Digital Pin Comparator

- Compare Levels: Independent high & low per pin
- Compare Threshold:
  - Range: -1 V to +6 V
  - Accuracy:  $\pm 15$  mV

### Timing Generator

- Architecture: Per pin
- Number of Edges: 4 edges per pin
- Format Sets: 256 per time domain
- Time Sets: 256 (period and edge)

### Pattern Source Memory

- Parallel Vectors:
  - Max Depth:
    - Reconfigurable 64M vectors
    - Bits Per Pin: 3
- Scan Vectors Maximum Depth Per Board Dping6-64:
  - 4608M x 2 chains
  - 2304M x 4 chains
  - 1152M x 8 chains
  - 576M x 16 chains
  - 288M x 32 chains

### Pattern Capture Memory

- Modes: Capture errors or data
- Max Depth: 32M vectors

### Frequency Counter

- Maximum Frequency: 200 MHz
- Resolution: 32 bit
- Switchable to any pin: Yes

### Parametric Measurement Unit (PMU)

- Architecture: Per Pin
- Force Voltage Range: 8V (-1 V to +7 V) 12 V (-1 V to +11 V)
- Force Voltage Accuracy:  $\pm 15$  mV /  $\pm 25$  mV
- Measure Voltage Range: 8 V (-1 V to +7 V)
- Measure Voltage Accuracy:  $\pm 15$  mV
- Force Current Range:
  - 32 mA, 8 mA, 2 mA, 512  $\mu$ A, 128  $\mu$ A, 32  $\mu$ A, 8  $\mu$ A, 2  $\mu$ A
- Force Current Accuracy:  $\pm(2\%$  of range + 80 nA)

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