

Diamond_x DCTM_x

Precision Data Converter Test Module



Automotive



Consumer



Power Management



IoT/loV & Optoelectronics



Industrial & Medical



MCU



Mobility

Highlights

- Supported applications: audio, DC source and measure and high resolution converter testing including INL/DNL, as well as dynamic parameters; THD+N, SNR, SFDR and THD
- Precision linearity to 1 ppm
- Single-ended, differential, and pseudo-differential connection
- Testing ADCs and DACs, and class-D amplifiers with a single instrument

Features

- 4 independent DC source and measure channels per board
- Each channel includes a stable, low-noise, high-accuracy, DC source and measure instrument
- 4 independent Audio source and measure channels per board
- Each channel includes a high purity sinewave source and measure
- Built-in "bucking DAC" technique achieving nano Volt resolution
- True parallel measurement capabilities and real time averaging
- Diamondx SmartMux, 16 channel output

- Bench-top capability in Semiconductor ATE
- 24 bit Resolution Source/Measure
- Front-end Smart Matrix
- 4 x 4:1 Output Fan Out
- 4 x 2 Alternative Inputs

Diamond_x DCTM_x

Precision Data Converter Test Module

The Data Converter Test Module (DCTM_x) delivers bench top precision for testing precision Analog to Digital Converters (ADCs), voltage output Digital to Analog Converters (DACs), and current output DACs. Each DCTM_x instrument includes a stable, low-noise, high-accuracy, DC source and measure instrument; and a high precision audio source and measure. There are four independent source and measure channels for each of the DC and audio functions per board.

Each DCTM_x instrument includes four high purity sinewave source and measure functions, for tones up to 50 kHz. These are designed for testing high precision Audio convertors and Class-D amplifiers which require extended dynamic range.

The ability of the DCTM_x to support the “bucking DAC” technique delivers a powerful capability to perform measurements usually only possible with precision bench top instrumentation.

For both DC and Audio, the source is designed to be able to be connected in a high precision “null” mode to the measure.

The nulling signal is subtracted from the DUT signal, leaving only a small error voltage to be measured.

The small error voltage is amplified to enable high resolution measurement of the DUT signal error. This technique allows greatly increased dynamic range and accuracy for both DC and Audio measurements.

The measurement instrument supports true parallel measurements capabilities and real time averaging. The source and measure instrument signals can be triggered via the SyncBus to synchronize with the other test system instrumentation.

On the Diamondx test system, the DCTM_x Audio source and Measure have separate DUT site pins from the DC source and Measure which connect to the DUT interface hardware via the SmartMUX. This provides 16 channels of connectivity to the DUT, enabling simpler, more reliable, interface hardware design with fewer relays.

Key Specifications

	Feature	± Ranges	Resolution	Update/Sample Rate
High Resolution DC	DC Stable Source	22 V, 11 V, 5.5 V, 2.75 V	24 bits	1 MS/s max
	DC Measure	11 V, 200 mV, 100 mV, 20 mV	156nV on 20mV range	980 kS/s max
High Resolution AC	Audio Source	22 V, 11 V, 5.5 V, 2.75 V	16 bits (1.31 uV on 22 V range)	Fixed 192 kHz
	Audio Measure	16 V, 1.6 V, 160 mV	18 bits	500 kHz – 1 MHz (Default 768 kHz)

All specifications are subject to change without notification and are for reference only. For detailed performance specifications, please contact Cohu.