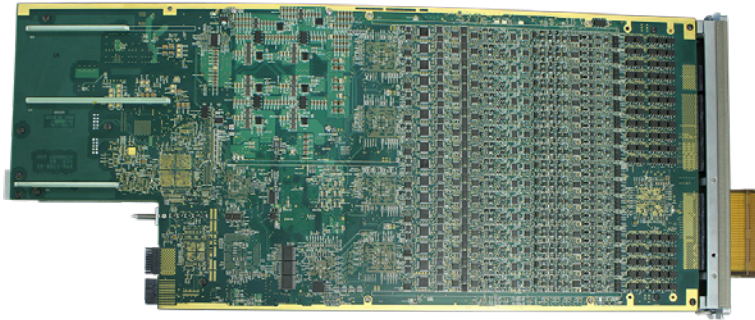


# Diamond<sub>x</sub> VI<sub>1x</sub>

Precision Voltage / Current Source and Measurement with Advanced Features



Exceptionally flexible instrument suitable for testing a variety of devices in the automotive and industrial markets. Designed with the stringent requirements of the automotive market in mind, the VI<sub>1x</sub> enables high multisite testing using the SmartMux. The VI<sub>1x</sub> is a 16-channel, four-quadrant voltage/current source and measurement instrument for the Diamondx and DxV test systems.

## Highlights

- V/I source mode
- Modulation generator and digitizer functions
- Time measurement
- Differential voltage measurement
- Timers, triggers and gates
- SmartMux 64-channel topology
- Alarms

## Features

- 16 channels of precision four quadrant V/I source and measurement capability are integrated into a single instrument for efficient multisite testing
- 4:1 SmartMux 64 channel capability reduces load board complexity
- Advanced features such as a modulation generator and digitizer per channel enable the VI<sub>1x</sub> to be used for a wide variety of device measurements
- A combination of internal and external triggers can be used for gating and sampling for maximum testing flexibility
- A time measurement unit measures rise and fall times, pulse, period, frequency and time difference, making the VI<sub>1x</sub> a truly versatile instrument
- Ganging capability extends the normal current limits allowing the VI<sub>1x</sub> to be used for testing a wider range of devices



Automotive



Consumer



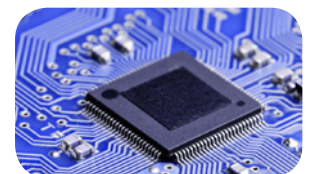
Flat Panel Display



Power Management



Industrial & Medical



MCU



Wireless/RF

- 16 Channels Per Board
- Four Quadrant Operation
- 4:1 SmartMux
- Differential V<sub>mea</sub>
- ±20 V / 300 mA, ±60 V / 100 mA
- AWG and Digitizer Functions

# Diamond<sub>x</sub> VI<sub>1x</sub>

## Precision Voltage / Current Source and Measurement with Advanced Features

### V/I Source Mode

The primary function of the VI<sub>1x</sub> is to source voltage and current. With multiple programmable force, clamp and measure ranges, the VI<sub>1x</sub> is versatile enough to be used for a broad spectrum of consumer, wireless and automotive applications. Adjacent channels can be ganged to achieve higher current for devices requiring extra power.

### Modulation Generator and Digitizer Functions

The VI<sub>1x</sub> has a built-in modulation generator and a signal digitizer per channel. The modulation generator has a bandwidth of 10 kHz and a resolution of 16 bits. Easy setup of VI<sub>1x</sub> modulation is possible by using predefined signals like sine and triangle waveforms. Support includes: Source Gate, Clamp Gate, Modulation Gate, Output Gate HI/LO and Measurement Strobe.

Sampling rates up to 100 kS/s per channel are possible for voltage and current digitizing, and the capture memory holds up to 8 kS per channel. Testing of numerous applications is possible with the high sampling rate and the high resolution of the modulation generator and digitizer functions.

### SmartMux Capability

The VI<sub>1x</sub> includes a 4:1 SmartMux which provides 64 outputs to the load board. Cohu's SmartMux topology reduces the complexity of load board design, speeding time to market, reducing cost and risk associated with automotive and power management devices. SmartMux enables high site count, uptime and faster time to market.

### Time Measurement

The VI<sub>1x</sub> has six timers for programmable gate per channel. The input signals are sampled by voltage and current comparators with 100nS resolution. Support includes: Source Gate, Clamp Gate, Modulation Gate, Output Gate HI/LO and Measurement Strobe.

### Differential Voltage Measurement

The VI<sub>1x</sub> offers the ability to make high-precision differential voltage measurements between adjacent channels on the instrument. Four voltage ranges are available for differential measurements:  $\pm 20$  mV,  $\pm 200$  mV,  $\pm 2$  V and  $\pm 5$  V.

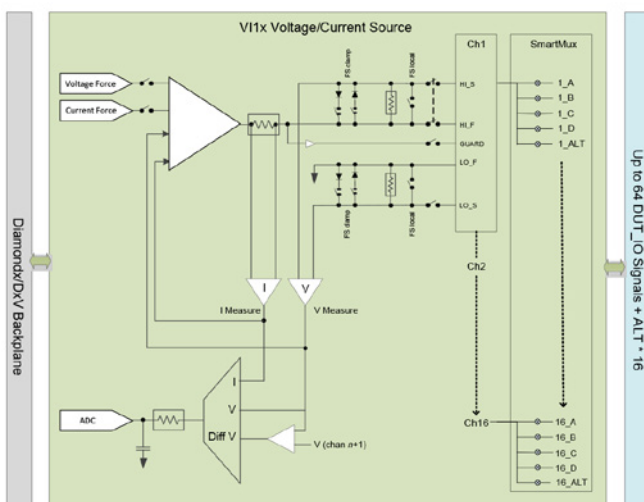
### Timers, Triggers and Gates

A powerful network of timers, triggers and gates allows VI<sub>1x</sub> events to be precisely timed according to the many programmable modes available. Six timers are available for each channel, and 16 synchronization lines connect to the system bus for signaling with other instruments. The user has full program control over each source and measure event.

### Alarms

Alarms can be strobed by measurement or checked by a software query. The following functions are monitored: clamp alarm, source-not-ready alarm, over temperature alarm, and over-voltage protection.

Advanced test capabilities such as time measurement, modulation, and differential DC measurements make the VI<sub>1x</sub> an exceptionally flexible instrument, suitable for testing a full spectrum of devices in the automotive and industrial markets.



- 16 Channels Per Board
- Four Quadrant Operation
- 4:1 SmartMux
- Differential V<sub>mea</sub>
- $\pm 20$  V / 300 mA,  $\pm 60$  V / 100 mA
- AWG and Digitizer Functions

# Diamond<sub>x</sub> VI1<sub>x</sub>

## Precision Voltage / Current Source and Measurement with Advanced Features

### Specifications

#### VI Pin Configurations

- $\pm 60$  V, 100 mA (Gangable to 200 mA)
- $\pm 20$  V, 300 mA (Gangable to 600 mA)

#### Force Voltage

Range	Resolution	Accuracy
$\pm 2$ V	16 bit	$\pm 0.03\%$ FSR
$\pm 6$ V	16 bit	$\pm 0.03\%$ FSR
$\pm 20$ V	16 bit	$\pm 0.03\%$ FSR
$\pm 60$ V	16 bit	$\pm 0.03\%$ FSR

#### Current Clamp

Range	Resolution	Accuracy
$\pm 300$ $\mu$ A	16 bit	$\pm 0.2\%$ FSR +1 nA/V
$\pm 3$ $\mu$ A	16 bit	$\pm 0.05\%$ FSR +1 nA/V
$\pm 300$ $\mu$ A	16 bit	$\pm 0.05\%$ FSR
$\pm 3$ mA	16 bit	$\pm 0.05\%$ FSR
$\pm 30$ mA	16 bit	$\pm 0.05\%$ FSR
$\pm 300$ mA / 100mA	16 bit	$\pm 0.05\%$ FSR

#### Modulation Source Memory

- Range: DC to 10 kHz
- Resolution: 16 bit
- Waveforms: sine, triangle, arbitrary
- Waveforms Memory: 8 kS/channel

#### Timer

- Timers/Channel: 6
- Range: 100 ns to 6,7 s
- Resolution: 100 ns
- Programmable gates for SGT, CGT, MGT, OGT\_HI/LO Meas. Strobe

#### Differential Voltage Measurement (Available Between Adjacent Channels)

Range	Accuracy
$\pm 20$ mV	0.5% FSR
$\pm 200$ mV	0.1% FSR
$\pm 2$ V	0.1% FSR
$\pm 5$ V	0.1% FSR

#### Digitizer

- Capture memory: Up to 8 k Samples
- Sample Frequency: 100 kSamples/s
- Resolution: 16 bit

#### Time Measurement

Range	Resolution
0 $\mu$ s – 6.7 s	100 ns

#### Frequency Counter

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

#### Current Measurement

Range	Resolution	Accuracy
$\pm 300$ $\mu$ A	16 bit	$\pm 0.2\%$ FSR +1 nA/V
$\pm 3$ $\mu$ A	16 bit	$\pm 0.05\%$ FSR +1 nA/V
$\pm 300$ $\mu$ A	16 bit	$\pm 0.05\%$ FSR
$\pm 3$ mA	16 bit	$\pm 0.05\%$ FSR
$\pm 30$ mA	16 bit	$\pm 0.05\%$ FSR
$\pm 300$ mA / 100mA	16 bit	$\pm 0.05\%$ FSR

#### Comparator

- Mode: Voltage /Current
- Resolution: 14 bit
- Accuracy: 0.5% FSR
- Propagation Delay: 1.0  $\mu$ s

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