



- **Broadband capabilities from 10 Hz to 100 kHz**
- **Phase accuracy of 0.10°**
- **Phase sensitive voltage accuracy of 0.08%**
- **360° offset capability**
- **Five-digit voltage and 0.01° phase angle resolution**
- **3 mV to 300 Vrms range**
- **Opto-isolated, high-impedance inputs**
- **Isolated auto-ranging inputs**

## GENERAL

The VXI-227 uses the latest generation DSP technology, which not only allows for all of the functions expected of a broadband Phase Angle Voltmeter to be placed on a single C-size card, but new functions as well. For instance, because it is not necessary for the VXI 227's processing algorithm to have precise knowledge of the signal's frequency, measurements can be made of any individual component of the signal over the range of 10 Hz to 100 kHz. This allows for analysis of a signal's even and odd harmonics, and of components unrelated to the fundamental frequency.

Total-mode voltage measurement gives a true rms reading of the input signal, including noise and harmonics. Phase sensitive measurements of In-Phase and Quadrature voltage as well as Phase Angle can be made at any frequency from 10 Hz to 100 kHz. In addition, the measurements can be given in polar coordinate or rectangular coordinate format. Typical applications include servo system alignment and avionics tests require small signal measurements in the presence of common-mode voltages, noise and harmonics.

## MEASUREMENT CAPABILITIES

<b>Total Voltage</b>	measures true rms voltage of the signal including harmonics and all other components within the 10 Hz to 100 kHz frequency range.
<b>Fundamental Voltage</b>	measures the magnitude of the component of the signal at the frequency of the reference input signal. Noise and harmonics are rejected.
<b>In-Phase Voltage</b>	measures the magnitude of the portion of the signal input that is in phase with the reference input.
<b>Quadrature Voltage</b>	measures the magnitude of the portion of the signal input that is quadrature phase with the reference input.
<b>Frequency Analysis Voltage</b>	measures the magnitude of any individual component of the signal within the frequency range of the unit.
<b>Phase Angle</b>	measures phase angle between the inputs to the reference and signal channels. Format is $\pm 180.00^\circ$ .

**Complex Measurement**

the Phase Sensitive Mode measurements are given in polar coordinate format; Fundamental Voltage Magnitude and Phase.

### SIGNAL ANALYSIS CHANNEL SPECIFICATIONS

**Resolution Voltage**

5 digits

**Phase Angle**

0.01°

**Voltage Range**3 mV to 300 V<sub>rms</sub> (full scale) in decade steps. Fixed or autoranging may be selected.**Frequency Range**

10 Hz to 100 kHz (broadband)

**Measurement Accuracy @ 25 ±5°C**

Phase Sensitive Voltage	3mV Range	All Other Ranges
10 Hz to 40 Hz	±0.6%	±0.15%
>40 Hz to 200 Hz	±0.4%	±0.12%
>200 Hz to 5 kHz	±0.15%	±0.08%
>5 kHz to 25 kHz	±0.22%	±0.15%
>25 kHz to 40 kHz	±0.28%	±0.28%
>40 kHz to 46 kHz	±0.38%	±0.38%
>46 kHz to 100 kHz	±0.55% + [(f-46 kHz) 0.009]%	±0.55% + [(f-46 kHz) 0.009]%
Total Voltage	3mV Range	All Other Ranges
10 Hz to 300 Hz	±0.25%	±0.20%
>300 Hz to 30 kHz	±0.25%	±0.15%
>30 kHz to 50 kHz	±0.40%	±0.30%
>50 kHz to 75 kHz	±0.55%	±0.45%
>75 kHz to 100 kHz	±0.88%	±0.88%
Phase Angle	3mV Range	All Other Ranges
10 Hz to 40 Hz	±0.6°	±0.15°
>40 Hz to 200 Hz	±0.4°	±0.10°
>200 Hz to 1.4 kHz	±0.1°	±0.10°
>1.4 kHz to 20 kHz	±0.15°	±0.15°
>20 kHz to 100 kHz	±0.25°	±0.25°
	(f-20 kHz) 0.75° 80 kHz	(f-20 kHz) 0.75°80 kHz

**Nulling Sensitivity**

1 µV

**Frequency Settability (Phase Sensitive Mode)**

The measurement frequency can be specified over the range of 10 Hz to 100 kHz. When a measurement frequency is not specified the frequency of the reference channel input is automatically used as the measurement frequency.

**Common Mode Rejection**

80 db at 400 Hz

**Harmonic Rejection**

Odd order: 50 db  
Even order: 60 db

**Input Impedance** 2 MW shunted by 60 pF (typical)  
**Isolation** 10 Hz to 100 kHz

**REFERENCE CHANNEL SPECIFICATIONS**

**Voltage Range** 50 mV to 300 V<sub>rms</sub>  
**Frequency Range** 10 Hz to 100 kHz (broadband)  
**Ranging** AGC with high/low range partition  
**Frequency Measurement** Resolution: 5 digits, 10 Hz to 100 kHz  
 Accuracy: ±0.10% of reading  
**Input Impedance** 2 MW shunted by 60 pF (typical)  
**Isolation** Broadband opto-isolated 10 Hz-100 kHz

**GENERAL SPECIFICATIONS**

**Interface** VXIbus Native (standard) MATE/CIL (optional)  
**Size** VXIbus C-size standard, single slot  
**Device Type** Message-based  
**Protocol** Word serial  
**Front Panel Connectors** D-type 9 pin males. Individual signal and reference connectors. Mating connectors are supplied. Ground binding post.  
**Cooling** 0.05mm H<sub>2</sub>O @ 0.8 liter/s  
**EMC/RFI** Conforms to VXIbus standard  
**Calibration Interval** 1 Year  
**Operating Temperature** 0°C to +55°C  
**Storage Temperature** -40°C to +75°C  
**Humidity** 95% maximum, non-condensing  
**Weight** 4.4 lbs (2kg)  
**Power Requirements** +5 Vdc 4.5 A  
 +12 Vdc 35 mA  
 -12 Vdc 20 mA  
 +24 Vdc 65 mA  
 -24 Vdc 30 mA

**PART NUMBER DESIGNATION**

**227 - F**  
 └─ Interface  
 1 = VXI Native  
 2 = MATE