Model 2250A
Phase Angle Voltmeter (PAV)

Features

- **High Accuracy, in half the size and weight of existing designs**
- High resolution Touch-Screen
- Up to 80 dB Harmonic Rejection
- Fast settling time, fully programmable
- Ethernet, USB & IEEE-488
- LVDT/RVDT Measurement Capability
- **Independent Front and Rear panel connections**
- Replaces all legacy NAI PAV's
- Optional 6VA Internal Reference

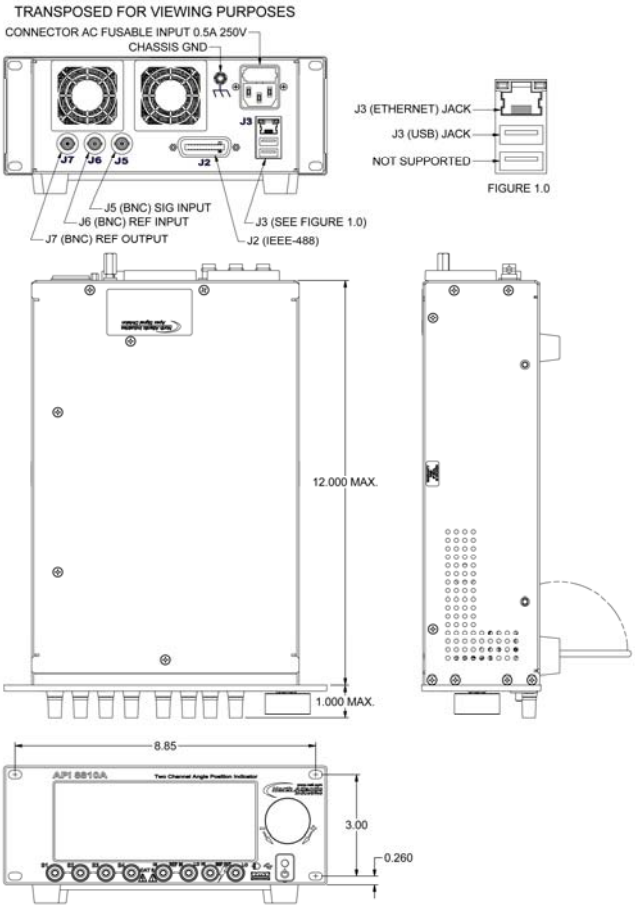
Description

This precision Instrument measures Total, Fundamental, Harmonics, In-phase, Quadrature, Frequency, THD, Ratio and Phase angle. All displayed at the same time. The isolated inputs enable null, ratio, and gain measurements.

This second generation **2250A** Phase Angle Voltmeter (PAV) is based on the latest DSP and FPGA technologies, and thus substantially extends and simplifies the capabilities of the legacy 2250. Our unique design allows local programming to be done either via a color integrated touch-screen, front panel USB mouse interface, or with the multi-purpose increment/setup knob. The large (2.3" x 5.8") screen can display up to 16 parameters at the same time. In addition, a sensitive analog null meter is included as a standard feature. Not only is our new design smaller, lighter and requires less power, but it also includes communication via Ethernet, IEEE-488 and USB, AND a greatly improved settling time and accuracy.

The 2250A is the recommended replacement for all prior NAI PAV versions, including 2250, 2251, 225, 321 and 213C.

Optional Reference: This design can also incorporate a 6VA programmable reference generator that is used for stand-alone applications (See Ordering Information).



Specifications:

Channels:	Two, Galvanic Isolation (*One for Signal and one for Reference inputs*)
Coupling:	DC
Voltage Ranges, Programmable	
Signal:	50_{mV} - 500_{Vrms} *(In Dedicated Ranges or Auto-Ranging)*
Reference:	50_{mV} - 500_{Vrms} *(In Dedicated Ranges or Auto-Ranging)*
	13 ranges – Per standard 1,2,5 base ranges
Impedance, Input	
Signal:	1 Meg Ohms (*min.*)
Reference:	1 Meg Ohms *(min.)*
Frequency Range	
Total:	10Hz - 1MHz
Fundamental Modes:	10Hz - 100KHz
Phase Accuracy:	Refer to "Table 1"
Phase Input Ranges:	0.0000º - 359.9999º or ±179.9999º
Phase Resolution:	0.0001º
Voltage Accuracy:	Refer to "Table 2"
Voltage Resolution:	Up to 6 Digits
Harmonic Rejection:	>80dB
CMRR (Common Mode Rejection Ratio):	Refer to "Table 3"

	10Hz-1kHz	1kHz-6.25kHz	6.25kHz -20kHz	20kHz-50kHz	50kHz-200kHz
Phase accuracy	±0.01°	±0.015°	±0.02°	±0.05°	±0.10°

Table 1 – Phase Accuracy

Voltage Accuracy: % of reading + % of full scale over specified Voltage and Frequency ranges.

Range (RMS):	10Hz-2kHz	2k-5kHz	5k-20kHz	20k-50kHz	50k-100kHz	100k-300kHZ	300k-1MHz
50mV to 100mV	0.04 + 0.04	0.07 + 0.09	0.1 + 0.08	0.25 + 0.15	0.85 + 0.4		
200mV to 20V	0.04 + 0.04	0.07 + 0.09	0.08 + 0.08	0.25 + 0.15	0.85 + 0.4	0.5 + 0.5	2.0 + 0.5
50V	0.04 + 0.04	0.04 + 0.09	0.08 + 0.08	0.15 + 0.15	0.4 + 0.4	0.5 + 0.5	
100V	0.04 + 0.04	0.03 + 0.05	0.09 + 0.08	0.15 + 0.15	0.4 + 0.4	0.5 + 0.5	
200V	0.08 + 0.05	0.08 + 0.05	0.09 + 0.08	0.3 + 0.15	0.6 + 0.4		
500V	0.08 + 0.05	0.08 + 0.05	0.09 + 0.08	0.3 + 0.2	0.5 + 0.6		

Table 2 – Voltage Accuracy

	5Hz-1kHz	1kHz-5kHz	5kHz -32kHz	32kHz-150kHz
CMRR (Common Mode Rejection ratio)	126 db	110 db	100 db	91 db

Table 3 – Common Mode Rejection Ratio

General:

Communication Interfaces:	Ethernet (*10/100/1000 Base-TX*), USB-A (*USB 2.0*) and IEEE-488 (*Standard*)
Temperature Range:	0 - 50°C operating; 0 to +70°C storage
Input Power:	85 VRMS to 265 VRMS, 47 to 440 Hz
Weight:	< 7.5 lbs.(3.40 Kg)
Dimensions:	13.5" L (34.29 cm) x 9.5" W (24.13 cm) x 3.5" H (8.89 cm)

Reference Generator Specifications:

Voltage Output:	2 Vrms to 115 Vrms, Programmable with a resolution of 0.1 V • 2.0 to 10.0 Vrms / 47 Hz to 20 KHz frequency range • 10.1 to 28.0 Vrms / 47 Hz to 10 KHz frequency range • 28.1 to 115.0 Vrms / 47 Hz to 2.5 KHz frequency range
Accuracy (No Load):	±5% of setting < 15 KHz ±10% of setting ≥ 15 KHz
Regulation	±5% (No Load to Full Load)
Output Drive:	6 VA maximum Output Protection Over-current (10x automatic retry; @ 1.3 sec int.; afterwards, shutdown w/ manual reset)
Frequency:	47 Hz to 20 KHz Programmable with 0.1 Hz steps
Frequency accuracy:	The greater of ±0.1% of frequency programmed or ±1 Hz.
THD:	±3% maximum
Reference Output Drive:	Isolated, single output

Ordering Information:

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Add "**R**" for Reference Supply; Add "**N**" for No Reference Supply