VITREK
www.Vitrek.com

# High Accuracy, High Precision Power Analyzers

# PA920/PA910 Power Analyzers


**Vitrek's Most Powerful, Accurate & Flexible Electrical Power Analyzer, Providing Ultra-High Accuracy (0.024%), Faster Sampling Rates, Bandwidth Performance and Greater Harmonic Frequencies, Yet Still Easy-To-Use and Affordable.**

**Industry's Easiest-To-Use Power Analyzer -** Vitrek's PA920/PA910 Series power analyzers are the industry's easiest-to-use power analyzer. Equipped with a full color touchscreen, the PA9xx enables users to quickly and easily setup configurations, custom screens and interface commands.

**Maximize Flexibility** - The PA920 power analyzer offers expanded power analysis capabilities. The PA920 offers 0.024% base power accuracy for the UT channel cards. Vitrek channel cards are user friendly, store their calibration data and can be quickly swapped in the field to meet your latest testing requirements. In addition, the PA920/PA910 provides easy channel selection for the user while offering 100 full precision readings per second and measurement bandwidths sufficient to handle 5 MHz signals.

**Maximum Results** - For tackling tough power factor, low phase angle and high crest factor loads, the PA9xx power analyzers are unbeatable. Offering full performance for crest factors as high as 100:1, the PA9xx series provides superior power measurement capabilities for the toughest power measurement applications. The PA920 also offers improved voltage and current self-heating adders over those of the PA900 series.

## Quality and Reliability

Vitrek, founded in 1990, is the premier source of precision power testing and measuring equipment for industrial and consumer product development and manufacturing. Vitrek's sophisticated technology provides companies the edge in design verification and product manufacturability.

**Maximum Performance in a Variety of Applications** - Design engineers are under constant pressure to increase efficiency and reduce excess product power consumption down to the last mW. Challenging programs like LED and HID lighting, solar panel energy output, efficiency testing on inverters and PWM motor drive systems on electric vehicles—all require fast, precise, reliable power measurement. The unequalled performance of the Vitrek PA920 gives you the competitive advantage—the ability to accurately capture the power data you need in a flexibile, accurate, easy-to-use power analyzer.

**Modular Design = Maximum Flexibility** - The PA920 Series Power Analyzers are available in both pre-configured models or can be purchased in a custom configuration to provide the performance you need at a price that meets your budget.

### PA920 Channel Cards for use with PA920 Mainframe (0.024% Accuracy UT Card)

UT Channel Card - Ultra-Precision Dual Shunt (1, 32A) Channel Card
UX Channel Card - Ultra-Precision External Current Transducer Input Channel Card
BT Channel Card - High Bandwidth Dual Shunt (1, 32A) Channel Card
BX Channel Card - High Bandwidth External Current Transducer Channel Card
KT Channel Card - Kilovolt (1.6kVrms Continuous) Dual Shunt (1, 32A) Channel Card
KX Channel Card - Kilovolt (1.6kVrms Continuous) External Current Transducer Input Channel Card
MT Channel Card - Motor Transducer Channel Card (Slot 4 only)

### PA 910 Channel Cards for use with PA910 Mainframe (0.045% Accuracy)

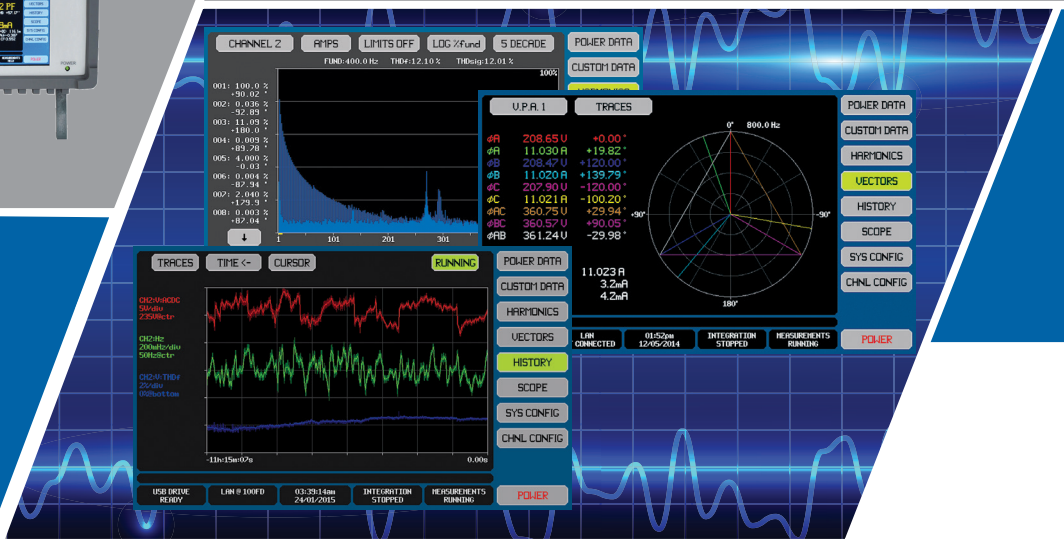
VT Channel Card - High-Precision Dual Shunt (1, 32A) Channel Card
VX Channel Card - High-Precision External Current Transducer Input Channel Card
MT Channel Card - Motor Transducer Channel Card (Slot 4 only)

*Specifications are subject to change without notice. Please visit **www.vitrek.com** for full specifications and ordering information.*

**30**
Years Industry
EXPERTISE

# PA920/910

## High Accuracy, High Precision Power Analyzers




# Test Like You MEAN IT

### CONDENSED FEATURES & BENEFITS

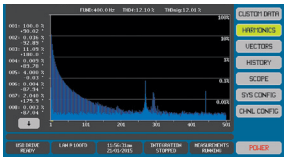
> Easy-to-use color touchscreen for quick setup, mesaurement configuration, channel selection and use.

> High Accuracy and frequency range 0.024% Power Accuracy, PA920 with UT card.

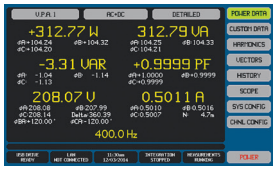
> Supports a variety of compliance and environmental performance standards including:

- EN60034-2-1:2014 (motor drives)
- EN50564:2011 (standby power)
- EN61000-3-2 and 3-12 and 4-7 (harmonics emissions)
- RTCA DO-160/E/F/G (avionics)
- Boeing 787B3-0147
- Airbus ABD0100.1.8 (A380) and ABD0100.1.8.1 (A350)

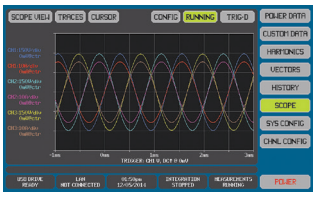
> Harmonics Screen displays up to 500 harmonics, even at aviation power frequencies. The chart can be set to show linear, relative linear, logarithmic or relative logarithmic amplitudes.



> Power Data Screen is available with one touch to display V, A, W, VA, VAR and PF for any selected channel or group of channels. In addition, peak readings, phase, CF and other parameters are also available.




> Scope Screen offers waveform acquisition and analysis similar to a digital scope. Up to six signals can be displayed each having user selectable scaling, offset and color.



> Cycle View represents a single cycle of the voltage and/or current periodic waveforms. User selectable amplitude and scaling provides almost unlimited detail and visibility.

> History Screen (bottom screen shown above) is a maintained continuous historical record of all non-harmonic measurement results and selected harmonics. Up to four user selectable parameters can be graphically displayed using the history screen.

> Additional Screens are available, visit www.vitrek.com to view additional specifications and display screens.

For complete specifications visit www.vitrek.com.

### PA920 ORDERING INFORMATION

| PART # | DESCRIPTION |
|---|---|
| PA920 | Ultra-Precision Power Analyzer Mainframe 4-channel capacity 0.024% Accuracy (UT Card) |
| UT | UT Channel Card - Dual Shunt (1, 32A) |
| UX | UX Channel Card - External Current Transducer Input Channel Card |
| BT | BT Channel Card - High Bandwidth Dual Shunt (1, 32A) |
| BX | BX Channel Card - High Bandwidth External Current Transducer Input Channel Card |
| KT | KT Channel Card - Kilovolt (1.6kVrms Continuous) Dual Shunt (1, 30A) |
| KX | KX Channel Card - Kilovolt (1.6Vrms Continuous) External Current Transformer Input Channel Card |
| MT | Motor Transducer Channel Card (Slot 4 only) |

* For pre-configured models visit us online at www.vitrek.com

### PA910 ORDERING INFORMATION

| PART # | DESCRIPTION |
|---|---|
| PA910 | Ultra-Precision Power Analyzer Mainframe 4-channel capacity 0.045% Accuracy |
| VT | VT Channel Card - Dual Shunt (1, 32A) |
| VX | VX Channel Card - External Current Transducer Input Channel Card |
| MT | MT Channel Card - Motor Transducer Channel Card (slot 4 only) |

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VITREK
www.Vitrek.com
Vitrek
12169 Kirkham Road
Poway, CA 92164
(858) 689-2755
info@vitrek.com
www.vitrek.com


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Accuracy specifications are valid for a period of two years after calibration in normal use. Consult operating manual for full specifications.

## Voltage Input Capability and Characteristics

| Specification | | V Channel Type | K Channel Type | B Channel Type | U Channel Type |
|---|---|---|---|---|---|
| **Voltage Input Burden** | | 1.201MΩ ± 3kΩ | 2MΩ ± 5kΩ | 801.5kΩ ± 2kΩ | 1.201MΩ ± 3kΩ |
| **Maximum Measurable Voltage (pk, dc or rms)** | | 2kV | 3.3kV | 1350V | 2kV |
| **Max. Specified Continuous Voltage (within maximum measurable peak)** | PA910 | $1000V_{RMS}$ | Not Available | Not Available | Not Available |
| | PA920 | Not Available | $1625V_{RMS}$ | $800V_{RMS}$ | $1250V_{RMS}$ |
| **No Damage Voltage** | <1ms | $<3kV_{RMS}$ and $V_{PK}$ | $<4kV_{RMS}$ and $V_{PK}$ | $<3kV_{RMS}$ and $V_{PK}$ | $<3kV_{RMS}$ and $V_{PK}$ |
| | <100ms | $<2kV_{RMS}$ | $<2.5kV_{RMS}$ | $<2kV_{RMS}$ | $<2kV_{RMS}$ |
| | <5s | $<1.5kV_{RMS}$ | $<2kV_{RMS}$ | $<1.5kV_{RMS}$ | $<1.5kV_{RMS}$ |
| **Mains Safety Rating** | | 1000V/CAT II, 600V/CAT III, 300V/CAT IV | | 600V/CAT II or III 300V/CAT IV | 1000V/CAT II, 600V/CAT III, 300V/CAT IV |
| **Transient Isolation Voltage (to ground)** | | >4.5kVpk | | | |
| **Voltage Accuracy (DC, 20Hz-1kHz) ± Self-Heating Adder** | PA910 | ±0.03%±0.02% per $kV^2$ | Not Available | Not Available | Not Available |
| | PA920 | Not Available | ±0.03%±0.006% per $kV^2$ | ±0.03%±0.015% per $kV^2$ | ±0.015%±0.0075% per $kV^2$ |
| **DC Voltage Floor** | | ±0.9mV | ±1.35mV | ±1.8mV | ±0.9mV |
| **AC Voltage Floor (10kHz BW)** | | $450\mu V + \frac{100\mu V}{Vrdg}$ | $750\mu V + \frac{200\mu V}{Vrdg}$ | $300\mu V + \frac{75\mu V}{Vrdg}$ | $450\mu V + \frac{100\mu V}{Vrdg}$ |
| **3dB Voltage Bandwidth** (typical) | | 2MHz | 850kHz | 4.5MHz | 2MHz |
| **Maximum Harmonic Frequency** | | <590kHz and <500 harmonics | | | |
| **Effective Sampling** | | 24bits @ 384MSPS | | | |
| **Physical Sampling** | | 6bits+18bits @ >1.2MSPS combined | | | |

## Current Input Capability and Characteristics

| Specification | | T Current Option | | X Current Option | |
|---|---|---|---|---|---|
| | | HI Range | LO Range | HI Range | LO Range |
| **Current Input Burden** | | 8mΩ nominal | 505mΩ nominal | 153kΩ ± 0.5kΩ | 100.5kΩ ± 0.3kΩ |
| **Maximum Measurable Current (pk, dc or rms)** | | 150A | 1.5A | 15V | 0.6V |
| **Specified Continuous Current (within measurable peak)** | PA910 | $30A_{RMS}$ | $1.25A_{RMS}$ | $12V_{RMS}$ | $0.5V_{RMS}$ |
| | PA920 | $32A_{RMS}$ | | | |
| **No Damage Current** | <8ms | $<200A_{RMS}$ and $<300A_{PK}$ | $<150A_{RMS}$ and $<200A_{PK}$ | $<1kV_{RMS}$ and $V_{PK}$ (fuse protected above 18V) | |
| | <40ms | $<75A_{RMS}$ | $<40A_{RMS}$ | | |
| | <1s | $<50A_{RMS}$ | $<5A_{RMS}$ | | |
| **Mains Safety Rating (Isolation)** | | 1000V/CAT II, 600V/CAT III, 300V/CAT IV | | | |
| **Transient Isolation Voltage (to ground)** | | >4.5kVpk | | | |
| **Current Accuracy (DC, 20Hz-1kHz) ± Self-Heating Adder** | UT or UX | ±0.018%±0.000025% per $A^2$ | ±0.018% | | |
| | Other | ±0.03%±0.00005% per $A^2$ | ±0.03% | | |
| **DC Current Floor** | BT or BX | ±438µA | ±3.25µA | ±126µV | ±6.15µV |
| | Other | ±188µA | ±1.25µA | ±46µV | ±5.15µV |
| **AC Current Floor (10kHz BW)** | | $38\mu A + \frac{1.5\mu A}{Ardg}$ | $0.25\mu A + \frac{0.1nA}{Ardg}$ | $6\mu V + \frac{35nV}{Vrdg}$ | $0.15\mu V + \frac{0.02nV}{Vrdg}$ |
| **3dB Current Bandwidth** (typical) | BT or BX | 5MHz | | 2.5MHz | |
| | Other | 2MHz | | | |
| **Maximum Harmonic Frequency** | | <590kHz and <500 harmonics | | | |
| **Effective Sampling** | | 24bits @ 384MSPS | | | |
| **Physical Sampling** | | 6bits+18bits @ >1.2MSPS combined | | | |

## Power (W) Input Capability and Characteristics

| Specification | | V Channel Type | K Channel Type | B Channel Type | U Channel Type |
|---|---|---|---|---|---|
| **Power Accuracy (DC, 20Hz-1kHz)** | PA910 | ±0.045% | Not Available | Not Available | Not Available |
| | PA920 | Not Available | ±0.045% | ±0.045% | ±0.024% |
| **Power Floor Adder** | | ±0.000025% * ((maximum measurable V*Ardg) + (maximum measurable A*Vrdg)). | | | |
| **Self-Heating Adder** | | ± (V and A self-heating) | | | |
| **DC Power Floor (Apply to DC Only)** | | (Vrdg*DC current floor) ± (Ardg*DC voltage floor) ± (DC voltage floor*DC current floor) | | | |
| **Phase Floor** | | ±0.005° per kHz | | ±0.003° per kHz | ±0.005° per kHz |

Note: Specifications subject to change.

Dimensional:
Nominal Dimensions 137mmH x 248mmW x 284mmD (5.4" x 9.75" x 11.2") with feet not extended
Nominal Weight 3.2kg (7lb) net, 5kg (11lb) shipping

Environmental
Storage Environment -20 to 75C (-4 to 167F) (non-condensing)
Operating Environment 0 to 40C (32 to 104F), <85% RH (non-condensing), Pollution Degree 2
Operating Altitude 0 to 2000m (6560ft) ASL

Power Supply
Line Power Installation Category II; 85-264Vrms, 45 to 65Hz, 40VA max. Internally fused with a non-user serviceable fuse

Interfaces LAN (Ethernet), Serial (RS232), USB (Client) and USB (Host – Front Panel) for mass data storage
Display 7" 800x480px 18bpp color LCD with resistive touch panel.

VITREK
www.Vitrek.com
Vitrek
12169 Kirkham Road
Poway, CA 92164
(858) 689-2755
info@vitrek.com
www.vitrek.com

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