

# VITREK 4700 PRECISION HIGH VOLTAGE METER



## HIGH VOLTAGE REFERENCE DIVIDER PERFORMANCE IN A COMPACT, RUGGED BENCH TOP PACKAGE

The new Vitrek 4700 Precision High Voltage Meter offers the highest level of measurement accuracy, yet with its color touch screen is surprisingly easy to use. Vitrek has harnessed DSP technology to provide outstanding AC & DC voltage accuracy, stability and resolution. Performance that rivals traditional HV reference dividers, yet unlike the delicate HV divider, the 4700 provides instant, direct, high voltage measurements in a highly portable, compact and rugged bench top enclosure.

The 4700's large, high resolution, color touch screen simultaneously displays the AC/DC content of the voltage being measured and in data log mode, can plot readings from a few seconds to several days.

## FEATURES

- Precise HV Measurement up to 10kV RMS Direct, available 35kV, 70kV & 100kV HV-SmartProbes™
- Calibrates Hipot Testers, HV Power Supplies and Insulation Testers
- Basic Accuracy - 0.03% DC and 0.1% True RMS AC
- Color Touch Screen - Makes for Easy Measurement Selection and Display
- PC Connectivity with standard Ethernet, Serial, USB Printer Port and optional GPIB
- Chart Mode Stores 300 Readings to Document HV source drift, ramp time, overshoot and sag
- Dual inputs provide Differential or Phase to Phase Voltage Measurement
- High Speed DSP provides up to 60 filtered readings per second
- True RMS AC Measurement from 0.01Hz to 600Hz - Covering VLF to Aviation Frequencies
- AC Noise Rejection 78dB - For Rock Solid, 6 Digit DC Measurements
- Optional Lithium-ion Battery Pack goes up to 11 hours between charges
- CE mark Certified to EN61010
- Three Year Extended Warranty



WORLD LEADERS IN HIGH VOLTAGE TEST & MEASUREMENT

# VITREK 4700 PRECISION HIGH VOLTAGE METER

## DIRECT MEASUREMENT OR HV-SMARTPROBE™ YOU MAKE THE CALL

Vitrek's 4700 precisely measures voltages directly up to 15KV peak, right out of the box - with no external probes. That's high enough for 90% of the hipot testers and other HV sources out there, however, should you care to expand your high voltage measurement range - just add one or more of the available 35KV, 70KV and 100KV HV-SmartProbes™. The Vitrek HV-Smart-Probes™ each store their own calibration data which is down loaded when they are plugged in to the 4700 - this results in high accuracy, calibrated readings and allows any Vitrek HV-SmartProbe™ to be used with any 4700 HV Meter.

The HV-SmartProbe's™ proprietary, ultra low TC attenuator design eliminates voltage coefficient adders - while its reduced capacitive construction technology enhances AC performance. In addition to the direct input terminal the 4700 has two probe inputs - one probe to extend your measurement range or two probes for making high voltage differential measurements.



HVL Series High Performance Lab Grade, HV-SmartProbes™ shown above in 35KV, 70KV and 100KV models. HVP Series portable HV-SmartProbes™ are available in 35KV and 70KV models and include probe stands for bench use.

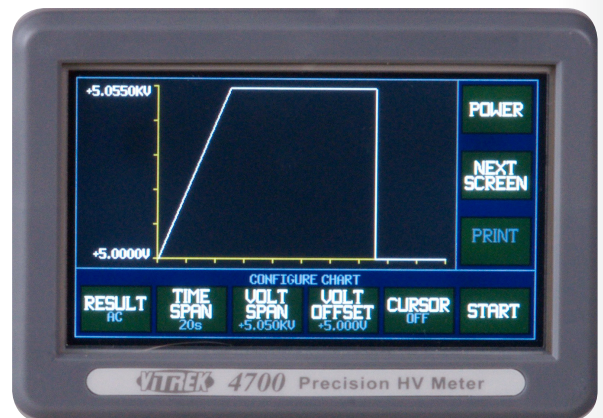
## SUPERIOR PERFORMANCE BY DESIGN

Measurement integrity is our bottom line - whether you are on a production line manufacturing high voltage medical imaging equipment, in a national laboratory conducting ground breaking research or in the cal lab certifying test equipment, it is essential to choose your tools carefully.

To insure the best possible measurement accuracy, the 4700 makes over 40,000 samples per second which are then filtered, sub-sampled, scaled and offset corrected to provide up to 60 enhanced readings per second - all with "error free" mathematic methodology. The True RMS AC readings are as true as they come, while the DC measurements offer rocket fast settling with rock solid stability. In addition to this, the 4700 provides VLF AC readings down to 0.01 Hz, as well as, Ripple, Peak to Peak, Crest Factor and Fundamental Frequency Measurement.

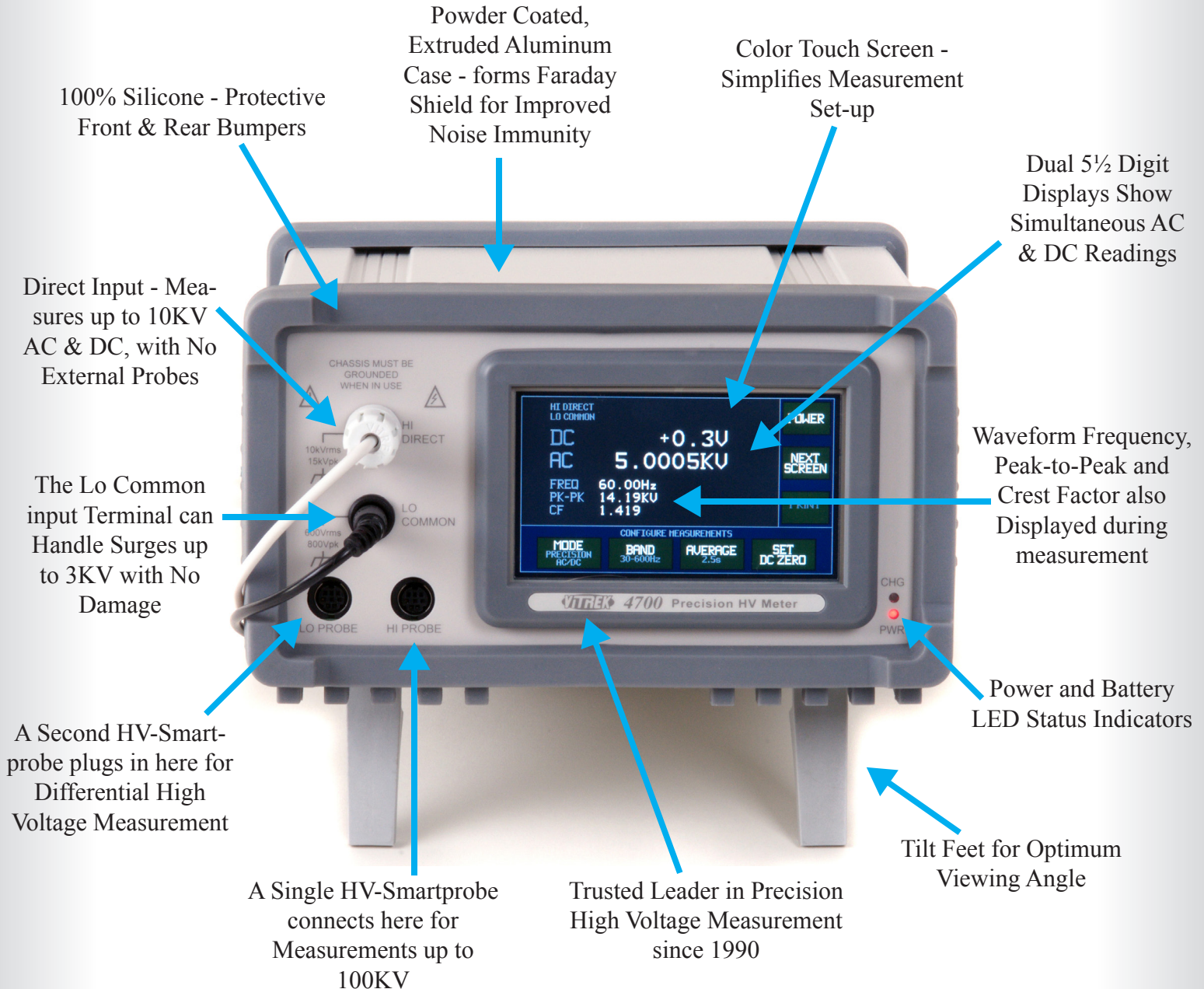
## HIGH VOLTAGE TEST AUTOMATION

Automate your HV test requirement with the 4700's built-in Ethernet port, high speed serial communication port or available GPIB. The 4700 is fully programmable - so you can select your measurement mode and bandwidth, then take readings as often as desired. The 4700 also comes standard with a USB printer port, to capture readings and get hardcopy printouts of HV chart plots - so you can document the sag or overshoot in a typical hipot test.



The 4700 Chart Mode automatically provides a scaled graphic presentation of up to 300 readings to aid in verification of voltage ramp and dwell times, undershoot, overshoot and drift.

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# PERFORMANCE SPECIFICATIONS

## 4700 DIRECT INPUT MEASUREMENT

### Maximum Input Voltage

10KV DC, 10KV AC RMS, 15KV peak (110MΩ input impedance)

### DC Voltage Accuracy

0.03% of reading + 0.03V + ½ digit

### AC Voltage Accuracy (True RMS, Band Selectable)

0.01 to 1Hz : 0.12% of reading + 0.1V + ½ digit

10 to 65Hz : 0.12% of reading + 0.1V + ½ digit

30 to 200Hz : 0.12% of reading + 0.1V + ½ digit

200 to 450Hz : 0.4% of reading + 0.1V + ½ digit

## 4700 HV-SMARTPROBE™ INPUT MEASUREMENT

### Maximum Input Voltages

35KV Probes 35KVDC, 30KV AC RMS, 45KV peak (200MΩ input impedance)

70KV Probes 70KVDC, 50KV AC RMS, 75KV peak (400MΩ input impedance)

100 KV Probe 100KVDC, 70KV AC RMS, 105KV peak (600MΩ input impedance)

### DC Voltage Accuracy

HVL-35: 0.025% of reading + 0.07V + ½ digit

HVP-35: 0.035% of reading + 0.07V + ½ digit

HVL-70: 0.03% of reading + 0.2V + ½ digit

HVP-70: 0.04% of reading + 0.2V + ½ digit

HVL-100: 0.05% of reading + 0.3V + ½ digit

### AC Voltage Accuracy (True RMS, Band Selectable)

HVL/P-35 0.01 to 1Hz : 0.15% of reading + 0.2V + ½ digit

HVL-35 30 to 200Hz : 0.05% of reading + 0.2V + ½ digit\*

HVP-35 30 to 200Hz : 0.1% of reading + 0.2V + ½ digit

HVL/P-35 200 to 450Hz : 0.6% of reading + 0.2V + ½ digit

HVL/P-70 0.01 to 1Hz : 0.2% of reading + 0.4V + ½ digit

HVL-70 30 to 100Hz : 0.075% of reading + 0.4V + ½ digit\*

HVP-70 30 to 100Hz : 0.12% of reading + 0.4V + ½ digit

HVL/P-70 200 to 450Hz : 2.5% of reading + 0.4V + ½ digit

HVL-100 0.01 to 1Hz : 0.3% of reading + 0.6V + ½ digit

HVL-100 30 to 70Hz : 0.12% of reading + 0.6V + ½ digit

HVL-100 70 to 200Hz : 1% of reading + 0.6V + ½ digit

# GENERAL SPECIFICATIONS

## AC/DC Voltage Measurement Resolution

Displayed Resolution: Selectable 4, 5 or 6 digits

Direct Input	.01V to 1400Vpk	0.1V to 14KVpk	1V above 14KVpk
35KV Probes	.01 to 800Vpk	0.1V to 8KVpk	1V above 8KVpk
70KV Probes	.01V to 1.6KVpk	0.1 V to 16KVpk	1V above 16KVpk
100KV Probe	.01V to 2.4KVpk	0.1V to 24KVpk	1V above 24KVpk

## Measurement Functions

DC Voltage, True RMS AC Voltage, Ripple, Peak to Peak, Crest Factor & Frequency Measurement (4 digits 0.01 Hz to 600Hz)

## Measurement Time

User selectable down to 16mS (60 readings per sec.)

## Maximum Input to Common Terminal

3 KV Peak for 1 sec, no damage

## Accuracy Specifications

Valid one year + 5C from Cal temperature

\*measurement accuracy within + 10Hz of calibration frequency

## High Voltage Self Heating (DC & > 20Hz)

The effect of self heating induced as a result of applied voltage, is not included in the accuracy specifications, takes up to several minutes to become fully apparent and a similar time to dissipate.

Direct Input	< 1.5ppm of reading per KV2
HVL 35	< 0.4ppm of reading per KV2
HVP-35	< 0.75ppm of reading per KV2
HVL-70	< 0.14ppm of reading per KV2
HVP-70	< 0.25ppm of reading per KV2
HVL-100	< 0.07ppm of reading per KV2

## Environmental/Physical

Operating Environment 0 to 50C, <85% RH (non-condensing)

Dimensions 218mm (8.5") wide x 130mm (5") high x 253mm (10") deep, nominally

Weight 2.4kg max (4kg shipping)

## Power

AC Source 45 to 450Hz, 100 to 265Vrms at <5W (20VA) using supplied external power supply

DC Source 11 to 16Vdc at <1.2A, using a center positive 2.5mm DC power connector

BP-47 Battery Option Up to 11 hours continuous operation

## Standard Accessories

The 4700 is shipped with a NIST traceable certificate of calibration with data, direct input test leads, chassis ground lead, and external power supply. The HVP series handheld probes ship with probe stand and detachable probe tip.

## HC-47 Hard Carrying Case

Rugged transit case with die cut foam inserts, accommodates 4700 with accessories and up to 2 HVP Series probes.

## Warranty

3 year extended parts and labor warranty with no charge registration and annual factory calibration. 1 year standard warranty.

# ORDERING INFORMATION

4700	Precision HV Meter
HVL-100	100KV Lab Precision Smart Probe
HVL-70	70 KV Lab Precision Smart Probe
HVP-70	70 KV Bench Precision Smart Probe
HVL-35	35KV Lab Precision Smart Probe
HVP-35	35 KV Bench Precision Smart Probe
BP-47	Lithium Ion Battery Pack
HC-47	4700 Hard Carrying Case
GP-47	GPIB Interface
RPT-47	Rear Panel Terminals (only)
RM-47	19" X 5.25" Rack Mount

12169 Kirkham Rd | Poway CA 92064

Tel: 858.689.2755 | Fax: 858.689.2760

Email: [info@vitrek.com](mailto:info@vitrek.com) | [www.vitrek.com](http://www.vitrek.com)



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