

# 4700 Precision High Voltage Meter



HV Reference Divider Performance  
Easy-to-Use Touchscreen Operation  
Crush-Proof Extruded Aluminum Enclosure

The 4700 Precision High Voltage Meter offers the highest level of measurement accuracy, yet with its color touchscreen—is surprisingly easy to use. Vitrek's DSP technology delivers outstanding AC and DC voltage measurement accuracy, stability, repeatability and resolution. High speed, direct readings are provided up to 10KV DC or rms AC and with available HV SmartProbes™, the measurement range can be extended to 35KV, 70KV, 100KV and 150KV.



Germany

**Telemeter Electronic GmbH**

Joseph-Gaensler-Str. 10, 86609 Donauwoerth  
Phone +49 906 70693-0, Fax +49 906 70693-50  
info@telemeter.de, www.telemeter.info

Switzerland

**Telemeter Electronic GmbH**

Romanshonerstrasse 117, 8280 Kreuzlingen  
Phone +41 71 6992020, Fax +41 71 6992024  
info@telemeter.ch, www.telemeter.info

Czech Republic

**Telemeter Electronic s.r.o.**

České Vrbné 2364, 370 11 České Budějovice  
Phone +420 38 530637, Fax +420 38 5510124  
info@telemeter.cz, www.telemeter.info

# Vitretek 4700 HV Meter – Precision and rugged reliability you can depend on

## Direct Measurement or HV SmartProbe™

Vitretek's 4700 precisely measures voltages directly up to 10KV, right out of the box—with no external probes. That's high enough for most of the 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, 100KV and 150KV SmartProbes™. The Vitrek SmartProbes™ 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 SmartProbe™ to be used with any 4700 HV Meter. The SmartProbe's™ proprietary, ultra-low TC attenuator design minimizes self-heating—while its low capacitance technology enhances AC



HVL Series High Performance Lab Grade, HV-SmartProbes™ shown above in 35KV, 70KV and 100KV models. Handheld HVP-35 portable HV-SmartProbes™ shown with detachable probe tip.

performance. In addition to the direct input terminal the 4700 has two probe inputs—use one probe to extend your measurement range or use two probes for making high voltage differential measurements.

## Superior Performance by Design

Measurement integrity is our bottom line—whether you are running a production line manufacturing 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 reading per second which are then filtered, sub-sampled, scaled and offset corrected—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, peak to peak, crest factor and fundamental frequency measurement. Available G series probes offer extremely high input impedances for electrostatic voltmeter applications.

## 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 plots—so you can document the sag or overshoot in a typical hipot test.



Chart Mode automatically plots voltage readings from a few seconds to several days. Highly useful for determining ramp linearity, overshoot and sag on hipot testers and other HV sources.

## Vitretek's Calibration laboratory is ISO 17025 Accredited

The 4700 and probes come with a free NIST traceable calibration certificate without data. For a reduced fee, Vitrek can provide your new 4700 or probes with an accredited calibration with data and uncertainties.



## Features

- Calibrates Hipot testers, HV power supplies and insulation testers
- Measures up to 10KV directly and 35, 70, 100 or 150KV with HV Smartprobes
- Basic accuracy—0.03% DC and 0.1% true RMS AC
- Color touch screen—makes for easy measurement selection and display
- Ethernet, serial, USB printer port all standard, GPIB optional

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**Features, continued**

- Simultaneous AC and DC voltage readings
- Chart Mode provides graphic documentation of HV drift, ramp time, overshoot and sag
- Dual inputs allows 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, six digit DC Measurements
- Optional battery pack goes up to 11 hours between charges
- G Series—high input impedance probes for electrostatic applications
- CE mark Certified to EN61010
- Available ISO 17025 accredited calibration
- Three year extended warranty (one year standard warranty)

# 4700 Performance Specifications

## Maximum Voltage Measurement (Input Impedance)

Direct Input Terminal.....	10KVDC, 10KVACrms (110 Meg ohms)
HVL/P-35 Probe .....	35KVDC, 30KVACrms (200 Meg ohms)
HVL-35G Probe .....	35KVDC (10 Gig ohms)
HVL-70 Probe.....	70KVDC, 50KVACrms (400 Meg ohms)
HVL-70G Probe.....	70KVDC (20 Gig ohms)
HVL-100 Probe.....	100KVDC, 75KVACrms (600 Meg ohms)
HVL-100G Probe.....	100KVDC (30 Gig ohms)
HVL-150 Probe.....	140KVDC, 100KVACrms (1 Gig ohm)

## DC Voltage Measurement Accuracy (Resolution)

Direct Input Terminal.....	0.03% of reading + 0.03V (10mV)
HVL/P-35 Probe .....	0.035% of reading + 0.07V (100mV)
HVL-35G Probe .....	0.25% of reading + 1.5V (1V)
HVL-70 Probe.....	0.04% of reading + 0.2V (1V)
HVL-70G Probe.....	0.35% of reading + 3.5V (1V)
HVL-100 Probe.....	0.05% of reading + 0.3V (1V)
HVL-100G Probe.....	0.5% of reading + 15 (10V)
HVL-150 Probe.....	0.08% of reading + 0.7V (10V)

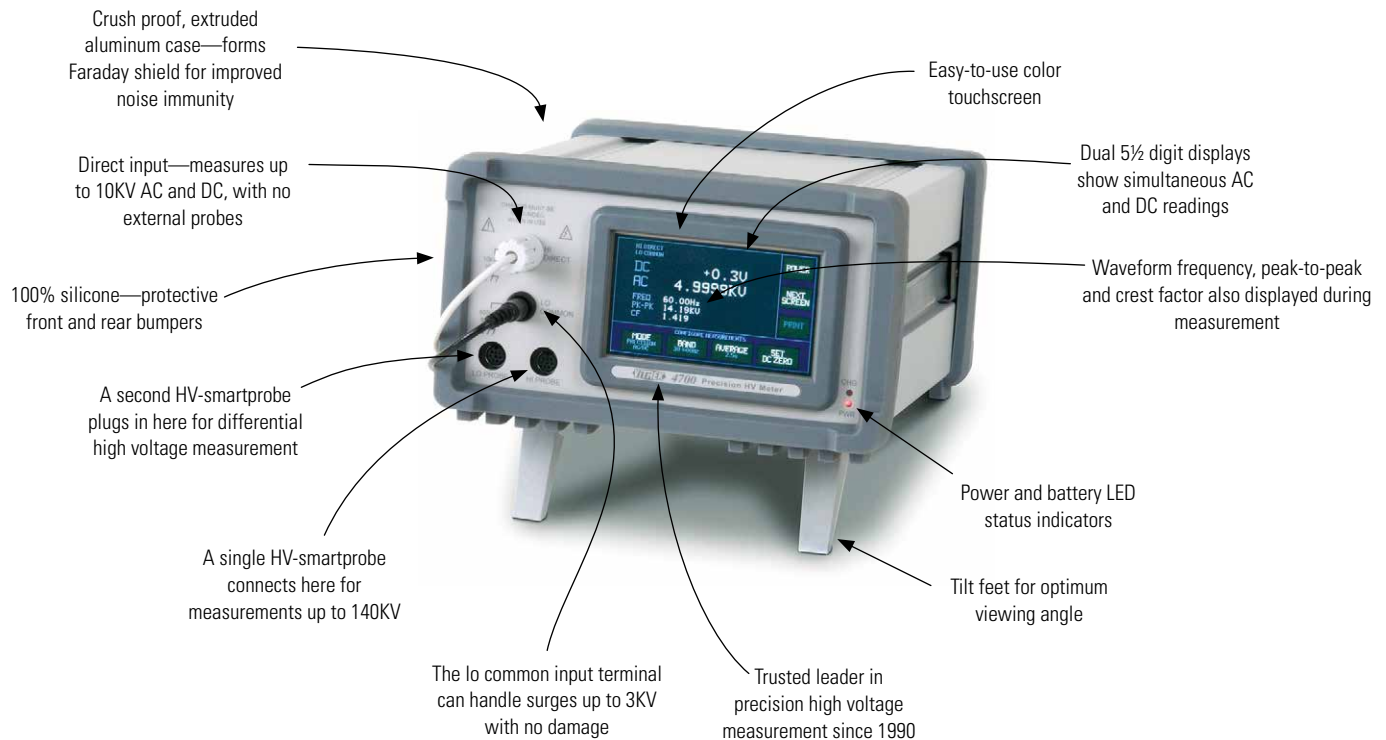
## AC Voltage Measurement Accuracy (Resolution)

Direct Input Terminal.....	0.12% of reading + 0.1V (10mV)
HVL/P-35 Probe .....	0.1% of reading + 0.2V (100mV)
HVL-70 Probe.....	0.1% of reading + 0.4V (1V)
HVL-100 Probe.....	0.1% of reading + 0.6V (1V)
HVL-150 Probe.....	0.5% of reading + 1V (10V)

## High Voltage Self Heating Effect

Direct Input Terminal.....	1.5 ppm of reading per KV <sup>2</sup>
HVL/P-35 Probe .....	0.4 ppm of reading per KV <sup>2</sup>
HVL-70 Probe.....	0.14 ppm of reading per KV
HVL-100 Probe.....	0.14 ppm of reading per KV <sup>2</sup>
HVL-150 Probe.....	0.2 ppm of reading per KV <sup>2</sup>

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## General Specifications

AC/DC Voltage Measurement Resolution:  
Selectable 4, 5 or 6 digits  
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: 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  $\pm$  5C  
from Cal temperature

## 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  
<15W (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 11hrs continuous  
operation

## Standard Accessories

The 4700 is shipped with a NIST traceable  
certificate of calibration with no data (ISO  
17025 cal cert with data and uncertainties is  
available with initial purchase for a reduced  
fee), direct input test leads, chassis ground  
lead, operator's manual, and external power  
supply. The HVP handheld probes comes with  
a detachable probe tip and the HVL series  
probes ship come with a toroid corona shield.

## Warranty

Three year extended parts and labor warranty  
with no charge registration and annual  
factory calibration. One year standard  
warranty.

## Ordering Information

4700	Precision High Voltage Meter
BP-47	Internal 11 Hour Battery Pack
GP-47	GPIB (IEEE-488) Interface
HC-47	Hard Carrying Case
RM-47	Rack Mount Kit
HVP-35	35KV Handheld Probe
HVL-35	35KV Bench Top Lab Probe
HVL-70	70KV Bench Top Lab Probe
HVL-100	100KV Bench Top Lab Probe
HVL-150	150KV Bench Top Lab Probe
HVL-35G	35KV High Impedance Lab Probe
HVL-70G	70KV High Impedance Lab Probe
HVL-100G	100KV High Impedance Lab Probe
ISO-CALN-47	4700 ISO 17025 Cal with Data & Uncertainties
ISO-CALN-P35	35KV Probe 17025 Cal with Data & Uncertainties
ISO-CALN-P70	70KV Probe 17025 Cal with Data & Uncertainties
ISO-CALN-P100	100KV Probe 17025 Cal with Data & Uncertainties
ISO-CALN-P150	150KV Probe 17025 Cal with Data & Uncertainties
TL-47	Replacement Test Lead kit