User's Guide
TESTEC High Voltage Probe TT-HVP 15 B



Warning This high voltage probe is designed to prevent accidental shock to the operator when properly used. This operating note must be read and understood prior to using the probe. Improper procedures or incorrect analysis of the measurement situation can result in serious shock.

General Information

The Testec High Voltage Divider Probe is an accessory to be used with analog or digital oscilloscopes having input resistance of 1 MΩ (± 1 %) and nominal input capacitance between 15 and 30 pF.

Specifications

Maximum Input Voltage
DC Voltage: 10 kV
AC Voltage: 7 kV RMS
PEAK Voltage: 20 kV

Compensation Range
For input capacitance
of 15 pF to 30 pF

Bandwidth
40 MHz (±3 dB)

Temperature Coefficient
Less than 200ppm/°C

Accuracy
DC Volts: ±6%

Rise Time
≤ 8,8 ns

Measurement Category
CAT 0

Other Characteristics

Input Impedance
100 MΩ, 3 pF ± 0,5 pF

Cable Length
2 meter

Altitude
Up to 4,600 meters (15.000 ft)

Operating Temperature
0 °C to +50 °C

Storage Temperature
-20 °C to +70 °C

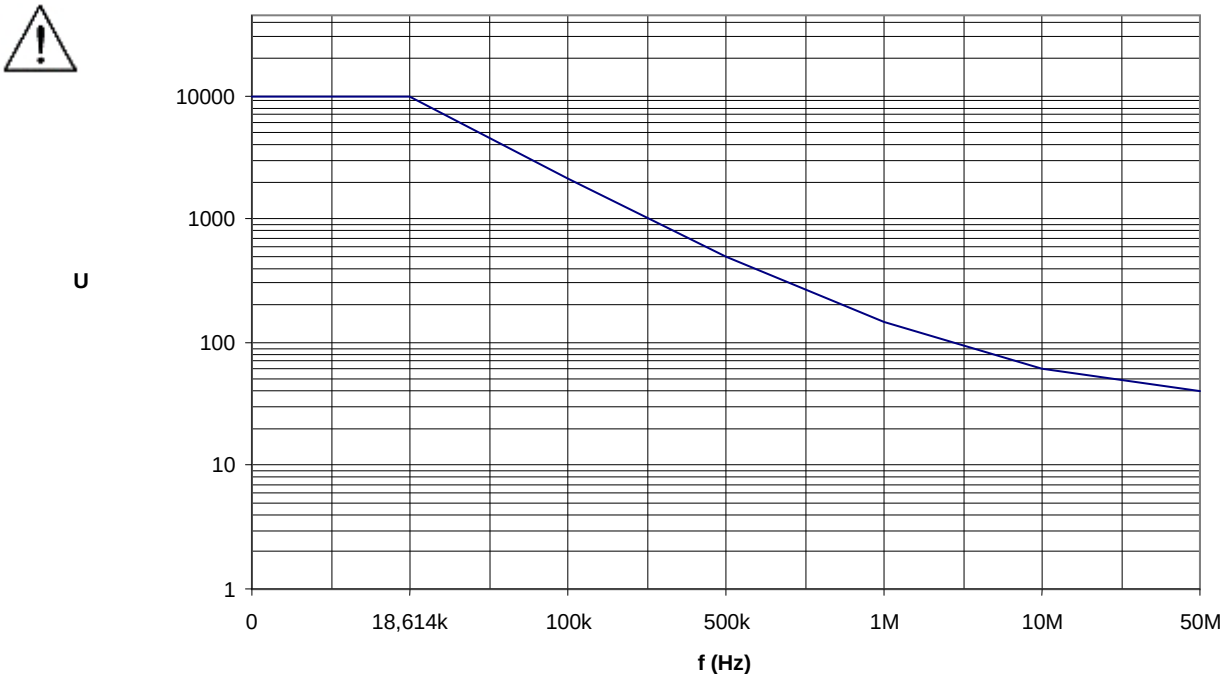
Humidity
Up to 80 % relative humidity at +40 °C

Specifications are subject to change without notice

Voltage Derating

The following graph shows the voltage versus frequency derating curve.

Voltage Versus Frequency Derating Curve

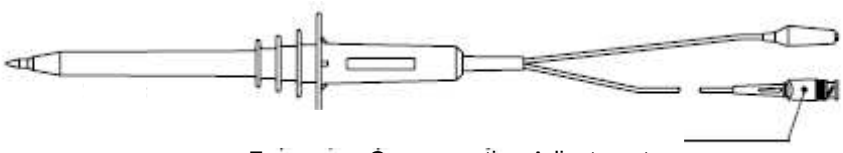


Frequency Compensation Adjustment

This high voltage probe has a frequency compensation adjustment that compensates for the input capacitance of the oscilloscope being used with the probe.

Use a square-wave generator set for approximately 100 Hz output. Proceed with the following steps for frequency compensation.

1 Connect the probe to the oscilloscope.
2 Connect probe tip to square-wave generator.
3 Adjust the square wave generator for approximately 10 volts amplitude.
4 Adjust the oscilloscope time base for 20 µsec/div.
5 Use a trimmer tool to adjust the compensation capacitor for the flattest pulse top. See the figure below for the location of the adjustment.



Frequency Compensation Adjustment

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Safety Precautions

- This high voltage probe must only be used by personnel who are trained, experienced, or otherwise qualified to recognize hazardous situations and who are trained in the safety precautions that are necessary to avoid possible injury when using such a device.
- Do not work alone when working with high voltage circuits
- For your own safety, inspect the probes for cracks and frayed or broken leads before each use. If defects are noted, DO NOT use the probe.
- Hands, shoes, floor and work bench must be dry. Avoid making measurements under humid, damp or other environmental conditions that might effect the safety of the measurement situation.
- It is advisable to turn the high voltage source off before connecting or disconnecting the probe.
- The probe body should be kept clean and free of any conductive contamination. Refer to the section on cleaning.

Operation

1 Connect the probe to the BNC input of the oscilloscope.
2 Select the desired volts/division range. (If you can set probe attenuation on the oscilloscope, set it to 1000:1)
3 Whenever possible, turn the high voltage source off before making any connections.
4 Connect the divider probe ground lead (alligator clip) to a good earth ground or reliable chassis ground.
5 Before turning on the high voltage source, make sure that no part of the person holding the probe is touching the device under test. Once this is certain, turn on the high voltage source.
6 Measure the voltage under test and observe the waveform on the oscilloscope. Remember the actual voltage is 1000 times greater than the oscilloscope waveform if the probe attenuation has not been set to 1000:1.
7 Turn off the high voltage source
8 Disconnect the High Voltage Probe from the high voltage source BEFORE disconnecting the ground clip lead.

Warning

- **Do not exceed 60 seconds of contact between the probe and circuit-under-test when measuring voltages >8 kV (DC), >5 kV (AC, rms), or >15 kV (AC, peak). We recommend that an interval of 10 minutes be taken between measurements.**
- Do not attempt to take measurements from sources where the chassis or return lead is not grounded
- The ground lead is critical to the safe operation of the probe. Failure to make this connection when making high voltage measurements may result in personal injury or damage to the probe or oscilloscope. This connection must always be made BEFORE the probe tip comes in contact with the high voltage and must not be removed until the probe tip has been removed from the high voltage source.
- Do not connect the ground clip lead to the high voltage source for any reason.
- Do not make any floating measurements with the Testec High Voltage probe.

Cleaning

- Clean only the exterior probe body and cables. Use a soft cotton cloth lightly moistened with a mild solution of detergent and water. Do not allow any portion of the probe to be submerged at any time.
- Dry the probe thoroughly before attempting to make voltage measurements.
- Do not subject the probe to solvents or solvent fumes as these can cause deterioration of the probe body and cables.



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