

# HVcompact



The HVcompact is a high voltage meter with an auto-ranging oscilloscope display of the voltage waveform. The unit displays  $\hat{U}$ ,  $\hat{U}/\sqrt{2}$ ,  $U_{rms}$ , frequency, and the crest factor. To improve the readability, one selected measurement is displayed using larger characters. To protect test specimens, the unit offers a pre-settable voltage limit, which trips a relay output. The divider ratio is widely adjustable and is kept with a non-volatile memory.

Mostly, the HVcompact is used in case of modernization or upgrade of high voltage test sets. With conventional analog or digital panel meters, usually, solely the voltage is displayed. The HVcompact adds several helpful functions.

### Oscilloscopic Display

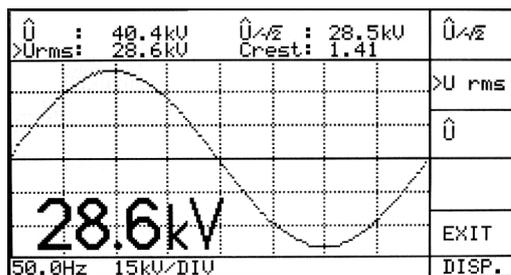
The input voltage is sampled in high resolution and one cycle is displayed as an oscilloscopic trace. Any distortion of the high voltage due to transformer core

saturation or power frequency harmonics, for instance, are clearly identified with this display. The screen is automatically synchronized with the measured voltage and the amplitude deflection is controlled by an auto-range function.

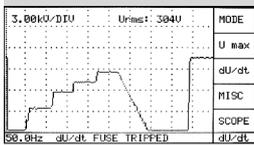
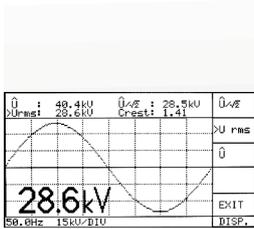
*All voltage information at a glance*

### Measurements

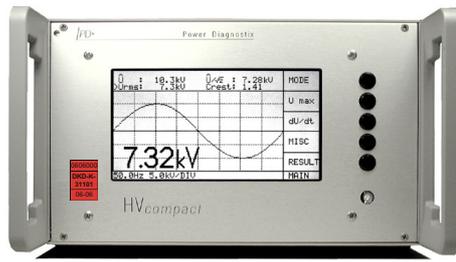
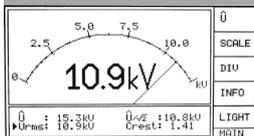
Usually, the instrument connects to capacitive or resistive divider. With larger high voltage transformers, the capacitance of the condenser bushing can be used. Within the menu of the HVcompact the divider ratio can be adjusted. It is kept with a non-volatile memory. The nominal input range of the HVcompact is  $100V_{rms}$ . In order to cover correctly even strong harmonics, peak voltages of up to  $200V$  are accepted and sampled.



Scope display of the waveform



HVcompact	
SW Version	: 1.01
SW Release	: 04/19/02
HW Version	: 6.01
Serial No	: 4
POWER DIAGNOSTIX Brüsseler Ring 95a Aachen, Germany Phone +49 241 74927 Fax +49 241 79521 www.pd-systems.com	
50.0Hz	U_rms : 10.5kV
EXIT	INFO



Using the sampled voltage, the instrument calculates based on the preset divider ratio the characteristic quantities of the high voltage signal. With the upper two lines of the display the peak voltage  $\hat{U}$ , the peak voltage divided by the square root of two  $\hat{U}/\sqrt{2}$ , and the effective voltage  $U_{rms}$  is shown. Additionally, the crest factor is calculated and displayed. With the bottom line of the display, the frequency of the captured voltage signal is shown. This bottom line further shows the scaling of the Y-axis grid of the oscilloscopic display. One selected value is displayed using larger characters for improved readability.

### Safety Features

A voltage limit can be set with the instrument in order to avoid that a test specimen is stressed above its allowable voltage. In case the voltage then exceeds this limit, a relay is tripped. This relay can be used to block the 'UP' button of the control circuit or to disconnect the main circuit breaker. Additionally, the instrument detects incipient breakdown or flashover. Therefore, a maximum permissible voltage change per second (dU/dt) can be set.

Giving an instant display of all relevant parameters of a high voltage signal including an oscilloscope trace makes the HVcompact an ideal upgrade for high voltage test rooms. Additionally, the HVcompact detects incipient breakdown and keeps a record of the voltage history.

Each individual cycle of the high voltage signal is analyzed. Especially with long-term voltage endurance tests, this feature can minimize the thermal destruction of the breakdown channel and, thus, improves the analysis of the defect.

### Optional REC OUT

The HVcompact is available with an optional recorder output. In case, a connector carries a re-converted analog (DC) signal of 0-10V, which corresponds to the high voltage signal. This signal can be fed to a paper recorder, for instance. A screw terminal carries the optional relay output signals for voltage limit and breakdown detection.

### Calibration

0606000  
DKD-K-31101  
06-06



By end of 2003, Power Diagnostix received the accreditation as calibration laboratory within the German Calibration Service (Deutscher Kalibrierdienst, DKD). The audit was held by 'Physikalisch Technische Bundesanstalt' PTB, the German authority of standards. Power Diagnostix accreditation is filed under DKD-K-31101.

In 2006, Power Diagnostix extended the accreditation by AC high-voltages up to 100 kV. On order the HVcompact can be calibrated on site together with its divider impedance.