

# VARISTOR-TESTER

## PG 6-250

**Combination wave generator:**

**Surge voltage:**

**1.2/50 $\mu$ s, 6 kV**

**Surge current:**

**8 / 20  $\mu$ s, 2.4 kA**

**+ Surge voltage**

**10 / 700  $\mu$ s**

**acc. to CCITT, ITU - T**



The VARISTOR-TESTER PG 6-250 is a compact test generator for testing the surge current capability of varistors. The unit contains a combination wave generator and a surge voltage generator acc. to CCITT, ITU-T.

The surge voltage generator delivers standard impulse voltages with the waveform 10/700 $\mu$ s. The pulse output amplitude can be adjusted up to 4.8 kV.

The combination wave generator integrated, delivers a standard impulse voltage with waveform 1.2/50  $\mu$ s for high-impedance loads,  $R_L > 100\Omega$ , and delivers a standard impulse current with waveform 8/20  $\mu$ s for short-circuited output. The peak value of the impulse output voltage can be adjusted up to 6.3 kV.

In order to test different types of varistors, the pulse forming network can be switched to three different ranges, surge currents from 1 A up to 2.4 kA can be generated.

The VARISTOR-TESTER, PG 6-250, features a microprocessor controlled user interface and display unit for ease of use. The microprocessor allows the user to either execute standard test routines, or a 'user defined' test sequence. The test parameters, which are shown on the built in display, are easily adjusted by means of the rotary encoder. A standard parallel interface provides the ability to print a summary of the test parameters whilst testing is being carried out. Moreover all generator functions may be computer controlled via the isolated optical interface.

PG 6-250 is able to generate the specified pulse current amplitudes even if the test device is connected to the output. Regarding the current range for surge testing, the varistor can be described by a voltage source  $V_z$  in series with a variable resistor  $R_{dyn}$ . The series impedance and clamping voltage of test device influences the pulse current amplitude. The maximum pulse current amplitudes with a varistor,  $V_z = 500V$ ,  $R_{dyn} = 2.5-250 \Omega$ , connected are noted in the data sheet. The software for remote control is able to calculate the parameter setting of the generator, depending on technical data of the varistor. Using the PU 10 switch unit allows successive testing of up to 10 devices, located on a PCB.

**Technical specification:**
**PG 6-250**
**Main frame:**

Microprocessor controlled LCD module	8*40 characters
Parallel printer interface for on-line documentation	25-way 'D' connector
Optical-interface for remote control of the generator	built-in
external trigger input: trigger-delay < 10µs	10 V at 1 kΩ
4 diagnosis inputs for monitoring of the test device	10 V an 1 kΩ

Connector for external safety interlock loop and external red and green warning lamps acc. to VDE 0104	24 V = 230 V, 60W
Mains power	230 V, 50/60 Hz
Dimensions:            desk top case            W * H * D	471*180*410 mm <sup>3</sup>
Weight	28 kg

**Pulse forming network:**

switchable

a)	Combination wave generator <b>1.2 / 50 µs, 8/20µs</b>	
	voltage wave, open circuit condition: front-time / tail-time	1.2/50µs±20%
	charging voltage $V_0$ , adjustable in steps of 25V	200 V - 6375 V ± 5%
	current wave: front-time / tail-time	8 / 20µs±20%
	pulse current amplitude, adjustable, via charging voltage available: $V_0 - V_z$	
a1	PFN 1: pulse current amplitude: short circuit / $R_{dyn} < 2.5\Omega$	2.4 kA / 1.2 kA
a2	PFN 2: pulse current amplitude: short circuit / $R_{dyn} < 25\Omega$	180 A / 100 A
a3		16 A / 10 kA

b)	Surge voltage with waveform <b>10/700µs</b> acc. to CITT K17/K22, IEC 1000-4-5	
	charging voltage $V_0$ , adjustable in steps of 25V	200 V - 5000 V ± 5%
	energy storage capacitor	20µF/5.0 kV
	max. energy stored	200 J
	discharging resistor	50 Ω
	series resistor	15 Ω
	load capacitor	0.2 µF
	damping resistor to the output terminal	25 Ω
	wave form: front-time / tail-time	10/700µs ± 20%

pulse output polarity, selectable	pos/neg/alt
charging time	< 10 sec
pulse output connector	coaxial
Monitor output for pulse output voltage	ratio = 100:1 ± 2%, 500 Ω
Monitor output for pulse output current, switch able	$R_m = 10/100/1000 \text{ m}\Omega \pm 2\%$

**OPTION 1:** Software PG 6-250, for remote control  
incl. 5 m fibre-optic cable and PC-interface

**OPTION 2:** Peak detector, built-in, Display of peak values  
of voltage and current.

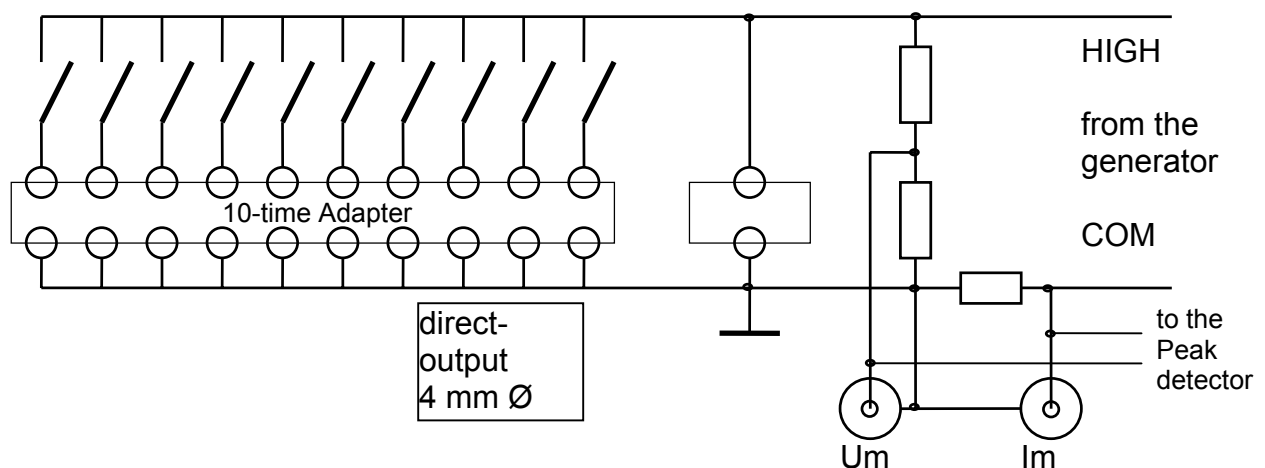
# Test device switch unit

# PU 10

built-in under the safety test cover, mounted on the test table.

- Switch unit for 10 test devices
- maximum test current: 1.2 kA, 8/20 $\mu$ s
- Adapter for test board, connected by contact pins.
- Impulse voltage divider integrated, BNC output for measuring the residual voltage of the test device with an external scope.
- Impulse current measuring resistor with BNC-output for external measurement.
- Impulse current measuring resistor connected to the internal peak detector, display of peak values, in conjunction with Option 2.
- Impulse voltage divider connected to the internal peak detector. Display of peak values, in conjunction with Option 2.
- Direct pulse output for testing single components, 4 mm  $\varnothing$  connectors.

Schematic:



- The complete unit can be simply replaced, if the contact pin's are damaged.

## Technical specification:

## PU 10

Attention! Monitor output specification above is replaced by the following specification:

Impulse voltage divider, built-in		100:1 $\pm$ 2%, B = 100 kHz
Monitor output for external scope		BNC
Impulse current shunt, switch able:	PFN 1	2 kA 10 m $\Omega$ , $\pm$ 2%, 100 kHz
	PFN 2	200 A 100 m $\Omega$ , $\pm$ 2%, 100 kHz
	PFN 3	20A 1.0 $\Omega$ , $\pm$ 2%, 100 kHz
Monitor output for external scope		BNC
Accuracy of the internal peak detector		$\pm$ 5% / full scale

incl. safety test cover, mounted on the test table

**Option 3:** Direct pulse output for testing single components, 4 mm  $\varnothing$  connectors

Technical specification subject to change

PG 6-250e.DOC 12/99