

PG 20-100

HV-Pulse Generator

Insulation testing of solar modules and other devices with impulse voltage

Voltage	0.8 – 20 kV
Waveform	1.2 / 50 μs
Range of EUT capacitances	10 nF – 183 nF



According to

IEC 61730-2 Ed 2.0 (2016)

IEC 61180

IEC 60664

IEC 60060

The HV-Pulse generator PG20-100 is used for impulse voltage tests of solar modules (photovoltaic panels) with the standard surge voltage waveform 1.2/50 μ s according to IEC 60060-1/2 up to 20 kV acc. to IEC 61730-2.

Other high-capacity devices and test objects can also be tested with impulse voltage according to the above-mentioned standards.

For the surge voltage tests of solar modules, these are enveloped with a copper foil as described in the relative above standard. After that the connections of the solar modules are tested with surge voltage against the copper foils. The tight copper foil envelope required by the standard results in comparatively high capacitances of approx. 10 - 183 nF, which is switched in parallel to the output of the impulse generator.

Therefore, a special impulse voltage generator is required for this standard specified test, which can generate the specified impulse wave shapes for the different EUT-capacitances, which are a result of the varying dimension of the solar modules to be tested.

The high voltage Pulse Generator comprises 5 different pulse forming networks, which allow to generate the requested wave shapes fully complying with the tolerances specified in the standard for the different EUT capacitances.

The PG 20-100 excels by its compact design, simple handling and precise reproducibility of the test impulses. The pulse forming Networks are equipped with maintenance-free semiconductor switches.

The generator features a microprocessor controlled user interface and a 7" touch screen unit for ease of use. The microprocessor allows the user to execute either 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 touch screen.

A standard USB port provides the ability to print a summary of the test parameters to a USB stick.

Moreover, all generator functions may be computer controlled.

The software program PG-REMOTE allows full remote control of the test generator via fiber optic Ethernet interface as well as documentation and evaluation of test results, accordingly to the IEC 17025. To record definite impulses, it is equipped with an Impulse Recording Function (IRF)

TECHNICAL SPECIFICATIONS	PG 20-100
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Mainframe	
Microprocessor controlled touch panel	7", capacitive
Optical Ethernet Interface for remote control of the generator	optional
Interface for saving reports	USB
External trigger input/ output	Switch/ 10 V
Connector for external safety interlock loop	24 V =
External red and green warning lamps	24 V=, 40 mA
Mains power	90V - 264V, 50/60 Hz
Dimensions of desk top case W * H * D	450*330*500 mm ³
Weight	30 kg

High- Voltage Pulse Generator acc. to IEC 61720-2 acc. to IEC 60060-1/2	
Impulse output voltage, adjustable	0.8 - 20 kV (± 3%)
Waveform of Impulse output voltage	1.2 / 50 µs (±30% / ±20%)
Polarity, selectable per software (no plugs necessary)	pos./neg.
Maximum stored energy Cs	100J
Charging time for max. charging voltage	approx. 10s
Interior load capacitance Cp	10 nF (± 10%)

Pulse forming networks to test solar modules:	Cp = 10 - 183nF
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The generator features pluggable outputs for switching the required test object capacitance. By combining the outputs, a range of 10-183nF is covered.

Range/Output	12nF	22nF	33nF	50nF	68nF
10-16nF	x				
16-27nF		x			
27-40nF			x		
40-57nF				x	
57-83nF					x
83-122nF			x		x
122-183nF			x	x	x

Spark-over detection:	PASS / FAIL
Impulse current output: on the generator's rear panel	HV conector
Impulse high voltage dividers to observe the impulse wave shape	built-in
ratio	1000 : 1 ± 5%

Accessories	
mains cable, key, HV-connection cable, operation instructions	

Options	PG 20-100
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Software PG-REMOTE, for remote control (Windows)	
With Impulse Recording Function (IRF)	
Incl. 5 m fibre optic cable and PC Ethernet interface	

Capacitor- calibration- kit	
Calibration capacities:	CCK 20 23nF, 33nF, 50nF, 73nF, 100nF, 156nF (±3%)