SCHLÖDER
EMV-Systeme & Komponenten

Self test / function test

of the 30 kV ESD – Simulator SESD 30000

1. Objective:

- **Saving complex and cost-intensive intermediate calibrations (Indispensable for automated tests of EUT' s)**

This new function makes it possible to use the self tests within an individually defined time. Within approx. 30 seconds the result will be presented. With a positive result the ESD tests can be continued.

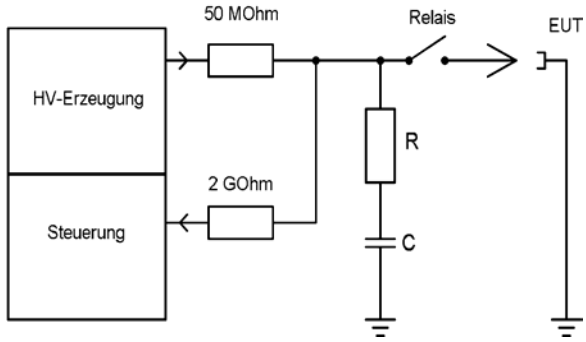
2. Requirements:

Test equipments work according fixed defined parameters. During the use the defined test parameters can change in a way that they could move outside the allowed tolerances.
In order to guarantee that the test equipment works within the limited values it should be calibrated periodically. The calibration intervals are usually between one year and more.

If the user finds out that the test generator does not work correctly anymore some time before a fixed calibration date, the question arises, from which time on the test did not correspond to the requirements. **With the new SESD 30000 with self test function you can examine the ESD generator easily** - for example daily or weekly. Without the possibility of the self test function you could have the necessity of expensive re-tests of the EUT (equipment under test).

3. Description of function

Altogether 14 different test steps were implemented into the firmware of the ESD simulator SESD 30000. The activation is made via the service menu. The individual test steps can be pursued on the displays of the basic unit.
At the end of the test the status of each individual step appears with the information "ok" or "error". The test can also be activated by computer control. The test result can be read.



The test tip of the ESD simulator must be grounded during the self test.

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4. Test steps

The self test is executed with both polarities. Following functions, assemblies and components are examined:

4.1 Power supply

- The specification of the power supply is examined for correct values
- Minimum and maximum output voltage is compared with given minimum and maximum ESD test voltages.
- The voltage regulation is examined. Is the power supply in the position to down-regulate from the maximum voltage to the minimum voltage within a given time?

4.2 High voltage production

- The high voltage discharge capacitor C is loaded to 30 kV
- Examination whether the voltage is reached within a defined time (Depending on different capacities other time definitions are given).
- Measurement of the maximum voltage

4.3. Capacity of C, insulation strength of the High voltage relay

- Examination of the still existing charging voltage after switching off the loading voltage
- Examination of the discharge wave shape. Depending upon the used discharge capacity another decaying wave exponential function is given
- Examination of the voltage at two points of the exponential function

4.4. High voltage relay

- Discharging by the high voltage relay at maximum and minimum ESD test voltage
- Examination of the residual voltage and the contact resistance

5. Information

The impedance of the resistors cannot be determined within the self test. Such measurements can only be made in the nanosecond range. We know however in our experience of many years with ESD - simulators no case, in which the impedance of the resistance would have seriously changed.

The function test does not replace an external calibration according to the standard IEC / EN 61000-4-2.

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