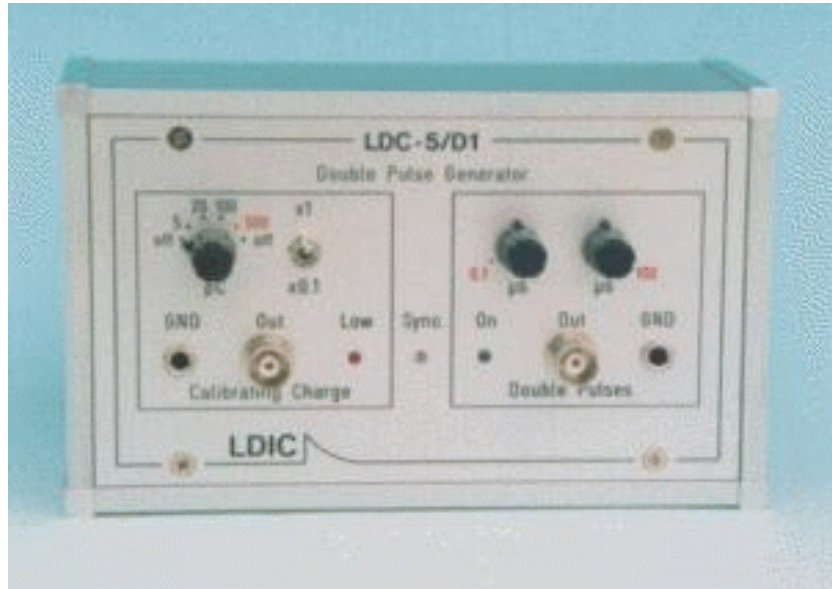


# DOUBLE PULSE GENERATOR

## LDC-5/D



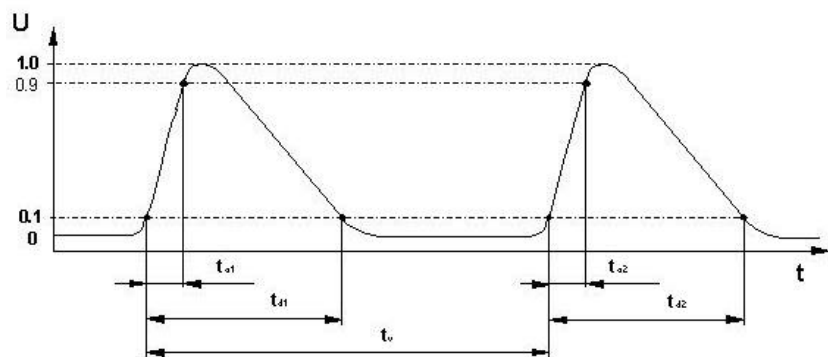
Partial discharge measurements (PD measurements) on long cables and in conformance with standards require, according to IEC 885-3 (Test methods for partial-discharge measurements on length of electric cable) and according to VDE 0472, 513 (Tests on cables and insulated leads, partial discharges) respectively, the verification of the double pulse behavior of the employed PD measuring system. According to the characteristic of PD signals which are obtained while decoupling the direct and the reflected PD pulse from waveguides without terminating impedance, the significant time parameters are specified as plotted in the following diagram.

The signals produced by the Double Pulse Generator LDC-5/D correspond to these standardized time parameters.

Rise time:  $t_{a1} = t_{a2} \leq 20 \text{ ns}$

Pulse duration:  $t_{d1} = t_{d2} \leq 150 \text{ ns}$

Skew:  $0,2 \leq t_v \leq 100 \text{ } \mu\text{s}$



In view of an universal use for the calibration of PD measuring circuits the Double Pulse Generator LDC-5/D is equipped not only with an output for the double pulses but also with one for calibrating charges.

The calibrating charges can be taken from the output socket intended for this purpose. The measuring range changeover switch facilitates a reduction of the calibrating charges by the factor 10 so that also the values 0,5-2-10-50 pC are available. When the selector switch for the calibrating charges is in the 500 pC position (red point mark) double pulses will appear on the output socket. Their time characteristics correspond to the specification shown in the diagram. It has to be taken into account that the BNC cable connected to the output socket has always to be terminated by a 50  $\Omega$  resistor. If the PD measuring instrument LDD-5/C is used in connection with the measuring impedance LDM-5, the transfer circuit will correspond to an impedance of 50  $\Omega$  so that an additional terminating resistor will be not necessary.

The skew of the second pulse is effected by the left-hand potentiometer within nanoseconds and by the right-hand potentiometer within microseconds.

To monitor the pulse shape and to ascertain the skew between both pulses an oscilloscope is necessary. The analog bandwidth of the oscilloscope has to be at least 50 MHz and its screen brightness has to meet the requirements on the plotting of pulses within the range of nanoseconds at a comparatively low pulse repetition rate. If the oscilloscope does not contain an internal delay unit, it is recommended to use the output for the calibration pulses to trigger the oscilloscope.

## Technical Parameters

### Output Double Pulses

- Pulse Shape
  - Rise Time (10% - 90%) < 20 ns
  - Duration (10% - 10%) < 150 ns
  - Interval (10% -10%) < 0,2  $\mu$ s  $\leq t_v \leq$  100  $\mu$ s
- Charge Output to the Measuring Impedance 50  $\Omega$  approx. 100 pC
- Pulse Repetition Rate approx. 600 Hz

### Output Calibrating Charges

- Calibrating Charges
  - Measuring Range x 1 5; 20; 100; 500 pC  
(Tolerance <  $\pm$  5%  $\pm$  1 pC)
  - Measuring Range x 0,1 0,5; 2; 10; 50 pC  
(Tolerance <  $\pm$  10%  $\pm$  0,2 pC)
- Duration of Charge Injection < 50 ns
- Pulse Repetition Rate approx. 600 Hz

### Power Supply

- Battery 9 V (6LR61)
- Power Consumption < 25 mA