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Data Sheet 1.35/15

Blocking / Protecting Impedance in AC Test Circuits, Type LS

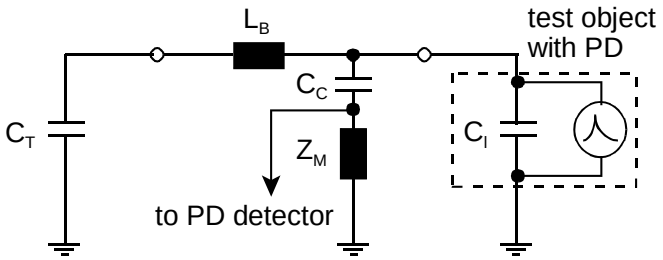
Application

A blocking impedance (see figure 1) arranged between the high-voltage source (e.g. AC test transformer or resonance reactor) and the capacitive load is able to fulfill two functions:

- For partial discharge measurement the blocking impedance is a high-voltage filter, which keeps conducted interfering signals away from the partial discharge measuring circuit.
- In the case of energy-rich transients, which can appear, for example, during disruptive discharges at long cables, the blocking impedance works as a protecting impedance by protecting the high-voltage source against high-energy steep-fronted voltage breakdowns.

In the first case, the low-frequency test voltage must moreover be able to pass the blocking impedance without a considerable voltage drop. In the following, blocking and protecting function of these impedances are not distinguished explicitly from each other, but for partial discharge measurement self-inductances above 6 mH shall be selected (see table 1).

HIGHVOLT manufactures blocking / protecting impedances both in one-phase design (e.g. cable testing) and three-phase design (e.g. transformer testing) for standard use in air (type LS), special use in SF_6 (type LSG) see Data Sheet 1.74.



L_B - self-inductance of the blocking impedance
C_T - capacity of the HV source
C_C - coupling capacitor
C_I - capacitive load (e.g. cable)
Z_M - measuring impedance

Figure 1: Equivalent circuit diagram of an AC test circuit for the partial discharge measurement.

Extension possibilities

Blocking impedances can be extended to high-voltage filters, for details see Data Sheet 1.36.

Table 1: Main parameters

Type	Rated voltage	Rated current	Self-inductance	Maximum frequency	Dimensions (approx.)		Weight (approx.)
					Diameter (D)	Length (L)	
	kV	A	mH	Hz	mm	mm	kg
LS 70-10/3	70	10.0	3	600	115	290	4
LS 70-90/1	70	90.0	1	180	400	710	20
LS 150-1/40[1)]	150	1.0	40	1000	105	722	2
LS 150-13/6[1)]	150	13.0	6	400	250	860	22
LS 150-50/1	150	50.0	1	1000	400	910	15
LS 250-4/33[1)]	250	4.0	33	1000	250	1265	9
LS 250-13/36[1)]	250	13.0	36	1000	400	1430	24
LS 250-20/9[1)]	250	20.0	9	280	400	1310	21
LS 250-40/17[1)]	250	40.0	17	300	600	1000	95
LS 250-60/4	250	60.0	4	1000	400	1640	42
LS 250-90/1	250	90.0	1	1000	250	1700	30
LS 260-100/4	260	100.0	4	1000	600	2460	102
LS 350-0.8/21[1)]	350	0.8	21	1000	250	1710	13
LS 350-5/38[1)]	350	5.0	38	1000	250	1500	10
LS 350-16/40[1)]	350	16.0	40	1000	400	1680	43
LS 350-30/10[1)]	350	30.0	10	210	400	1370	32
LS 350-65/1	350	65.0	1	1000	400	2330	25
LS 350-100/6[1)]	350	100.0	6	170	600	2180	125
LS 500-2/100[1)]	500	2.0	100	1000	250	2230	22
LS 500-13/17[1)]	500	13.0	17	1000	250	2000	15
LS 500-25/38[1)]	500	25.0	38	1000	400	2330	65
LS 500-60/8[1)]	500	60.0	8	220	400	3310	85
LS 520-80/11[1)]	520	80.0	11	1000	600	2812	129
LS 700-5/40[1)]	700	5.0	40	1000	400	2630	20
LS 700-8/4	700	8.0	4	1000	400	3150	22
LS 700-10/43[1)]	700	10.0	43	500	400	2630	32
LS 700-80/6[1)]	700	80.0	6	1000	600	3250	108
LS 800-10/97[1)]	800	10.0	97	400	740	3150	70
LS 800-30/24[1)]	800	30.0	24	1000	400	3060	75
LS 800-70/6[1)]	800	70.0	6	1000	400	3320	78
LS 1000-1/40[1)]	1000	1.0	40	1000	740	4860	67
LS 1200-60/43[1)]	1200	60.0	43	1000	800	4980	110
LS 1200-20/88[1)]	1200	20.0	88	300	820	4200	100

[1)] Suitable for partial discharge measurement

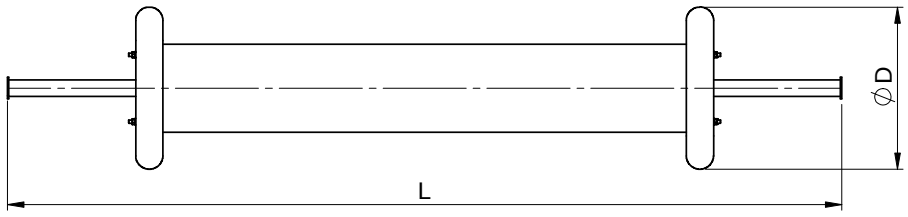


Figure 2: Example for a blocking impedance

Type designation

LS a-b/c

a = rated voltage in kV
b = rated current in A
c = self-inductance in mH