

Lightning barriers FRD, FLD and lightning arrester TKS-B



Operation and fields of application

Lightning barriers TKS-B, FRD, FLD, FRD 2 and FLD 2 protect electronic measurement and control installations from surges due to atmospheric discharges (storms) or in the form of travelling waves on data lines.

Arrester TKS-B is used as a lightning arrester (LPZ 0->2) for data lines of all kinds (max. 110 V, 2 MHz).

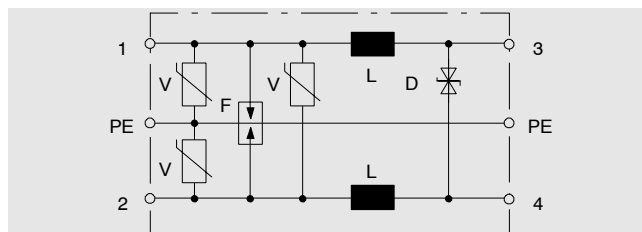
Lightning barriers of series FRD and FLD are designed for use in non-earthed (asymmetrical, floating) two-wire systems. The FRD version can be used in installations where an increase in resistance is permitted. If the resistance must not be increased, version FLD is used.

Lightning barriers of series FRD 2 and FLD 2 are intended for use in single-wire earth-related systems (symmetrical, potential-related). Here too, a choice can be made between series resistance and series inductance. If the resistance can be increased, version FRD 2 is used, and with a voltage-controlled installation, type FLD 2. With their two-stage design,

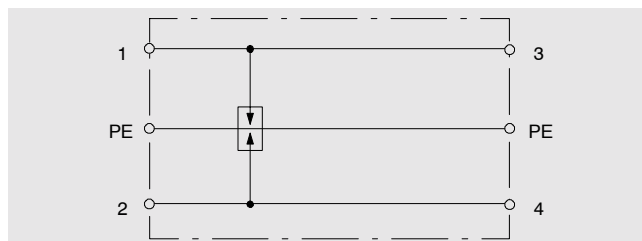
OBO lightning barriers are also suitable for installation at zone interface 1 to 3.

The two-stage circuit of FRD and FLD devices, consisting of gas discharge tube, varistors and Transzorb diodes, features high discharge capacity, short clamping time and a low protection level.

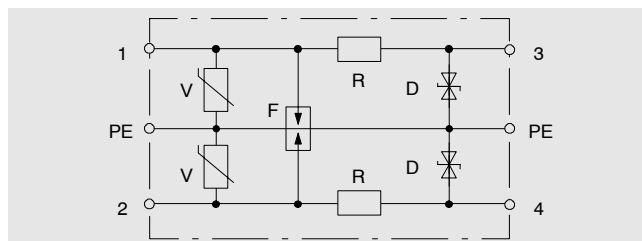
The single-stage protective circuit of TKS-B devices ensures a very high discharge capacity.



Block diagram of FLD



Block diagram of TKS-B



Block diagram of FRD 2

Mounting

OBO lightning barriers can be installed in any standard switchgear cabinet or distribution box, simply by snap-fitting to a 35 mm top-hat rail. Screwless terminals keep installation costs low.

Features at a glance FRD, FLD

Mounting on 35 mm top-hat rail

Special voltages can be provided for without difficulty

Screwless clamp terminals

Y circuit

Advantages in use

▶ Direct installation in distribution board housing or switchgear cabinet

▶ User-oriented surge protection design is possible

▶ Easy to install

▶ Safety from transient surges on the phase, neutral or protective earth wire

Technical data

Lightning barriers		FRD 5	FRD 12	FRD 24	FRD 48	FRD 60	FRD 110	TKS-B
		FLD 5 FRD 2-5 FLD 2-5	FLD 12 FRD 2-12 FLD 2-12	FLD 24 FRD 2-24 FLD 2-24	FLD 48 FRD 2-48 FLD 2-48	FLD 60 FRD 2-60 FLD 2-60	FLD 110 FRD 2-110 FLD 2-110	
LPZ		1 → 3						0 → 2
Nominal voltage	U_N	5 V	12 V	24 V	48 V	60 V	110 V	110 V
Max. continuous operating voltage	U_c	6 V	13.5 V	27 V	53 V	66 V	122 V	130 V
Rated load current FRD, FRD 2, TKS-B	I_L	0.2 A						16 A
Rated load current FLD, FLD 2	I_L	1.0 A						-
Nominal discharge current (8/20)	I_n	10 kA						20 kA
Impulse current 10/350	I_{imp}	-						6 kA
Voltage protection level U_p	U_{p3-4}	≤ 13 V	≤ 29 V	≤ 51 V	≤ 100 V	≤ 130 V	≤ 300 V	≤ 450 V
Series resistance per path	R FRD, FRD 2-...	15 Ω						-
Series inductance per path	L FLD, FLD 2-...	100 μH						-
Connection cross-section single-stranded, multi-stranded, fine-stranded with core end sleeve, pin cable lug, crimp sleeve		0.14-2.5 mm ²						
Stripping length for connecting cables		6-7 mm						
Colour		Light grey, similar to RAL 7035						
Material		Polyamide 6						
Mounting		Snap-fitting on 35 mm top-hat rail to DIN EN 50022						
Dimensions		Width 17.8 mm, depth 55.0 mm						

Subject to technical alterations

Ordering data

Type	Description	Order no.
FRD 5	5 V version	5098 49 1
FRD 12	12 V version	5098 50 5
FRD 24	24 V version	5098 51 3
FRD 48	48 V version	5098 52 1
FRD 60	60 V version	5098 54 8
FRD 110	110 V version	5098 55 6
FLD 5	5 V version	5098 59 9
FLD 12	12 V version	5098 60 2
FLD 24	24 V version	5098 61 0
FLD 48	48 V version	5098 62 9
FLD 60	60 V version	5098 63 7
FLD 110	110 V version	5098 64 5
FRD 2- 5	5 V version	5098 79 3
FRD 2- 12	12 V version	5098 71 8
FRD 2- 24	24 V version	5098 72 6
FRD 2- 48	48 V version	5098 73 4
FRD 2- 60	60 V version	5098 74 2
FRD 2-110	110 V version	5098 75 0
FLD 2- 5	5 V version	5098 86 6
FLD 2- 12	12 V version	5098 80 7
FLD 2- 24	24 V version	5098 81 5
FLD 2- 48	48 V version	5098 82 3
FLD 2- 60	60 V version	5098 83 1
FLD 2-110	110 V version	5098 85 8
TKS-B	Single-stage basic protection	5097 97 5

