Protection classes B, C, D from one source

Limitor Surge Protection

Causes of surge voltage

General

The steadily increasing use of highly sensitive electronic devices necessitates special protection concepts.
The greatest hazard potential for all electrical installations and equipment is lightning strikes, whether direct or in the near vicinity.

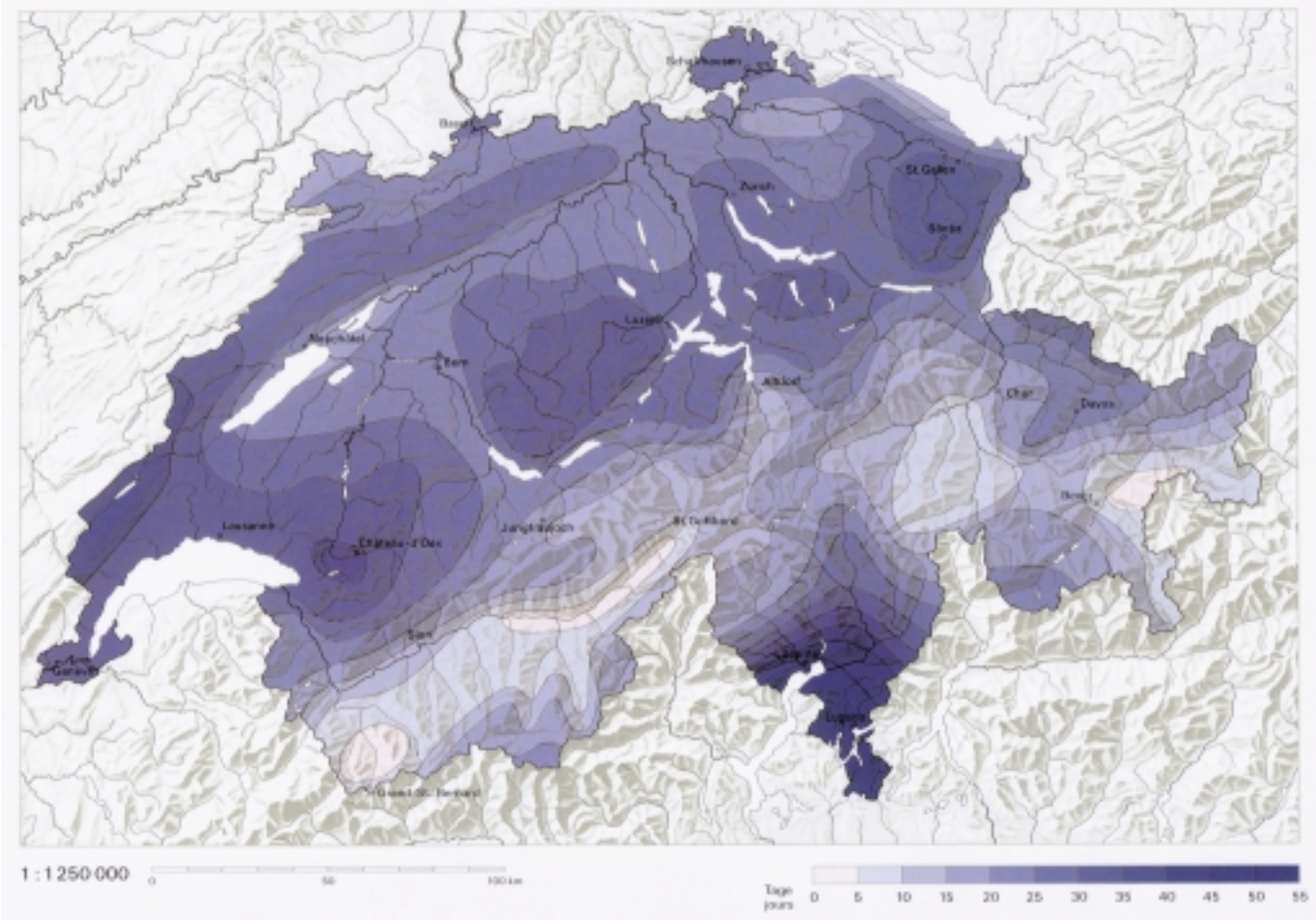
Overvoltage due to lightning strikes or uncontrolled switching operations can reach peaks of up to several 1'000 volts. To prevent these surges from destroying our sensitive electronic systems or equipment, the surges must be short-circuited effectively and specifically with equipotential bonding (ground).

This protection against surge voltage can be achieved with the targeted implementation of the LIMITOR surge arrester from ABB.

Because we depend on electronic data processing nearly everywhere today, such failures could have catastrophic consequences.

Surges can have the following causes:
- Ditect lightning strike
- Lightning strikes at a distance
- Switching operations in energy networks or buildings
- Overvoltage caused by switching on and off of inductive loads (fluorescent lights, photocopy machines, PC's, etc.)

Annual frequency of thunderstorms



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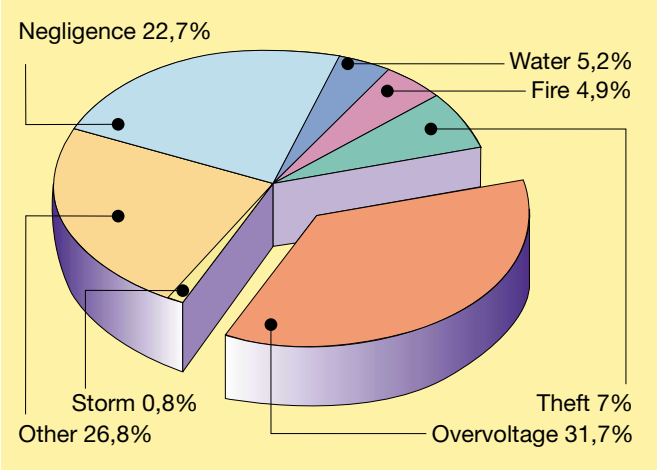
Damages caused by overvoltage

Are your electronic systems and equipment protected against overvoltage?

Damage statistics of an insurance company



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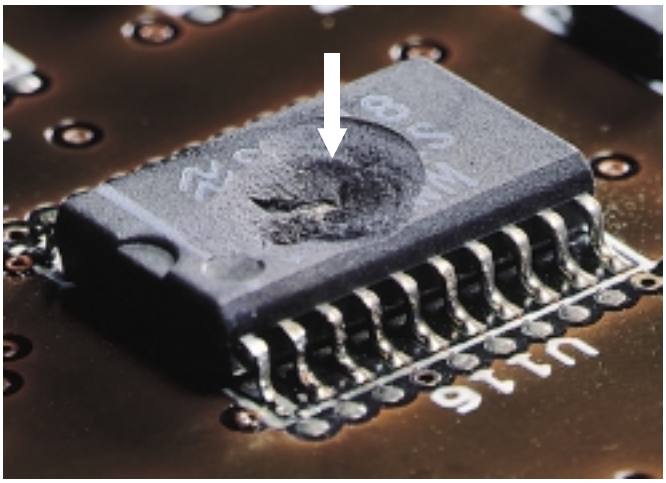
Possible effects:

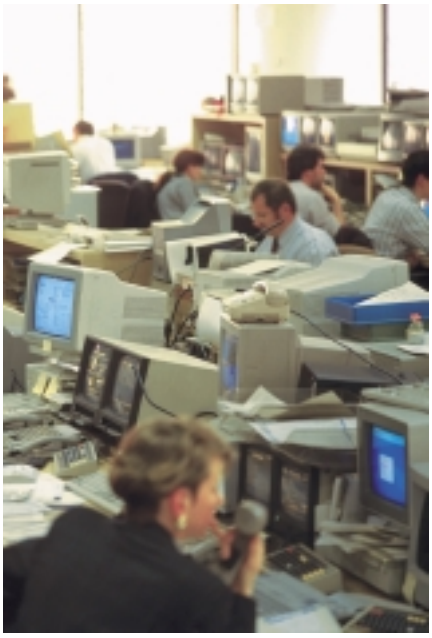


IC destroyed by overvoltage

Protect your systems and equipment

With the targeted use of lightning and surge arresters, you can minimize the risk of damages!

Private households
- TV
- Stereo systems
- PC's



Offices
- EDP systems
- PC's
- Copy/fax machines

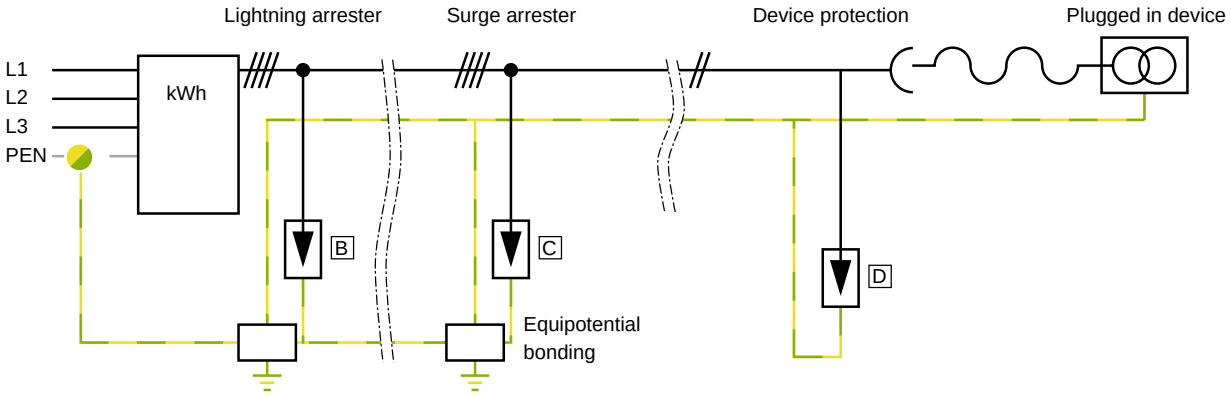
Industry
- Electronic machine control
- Industrial PC's
- PLC control

Your benefits at a glance

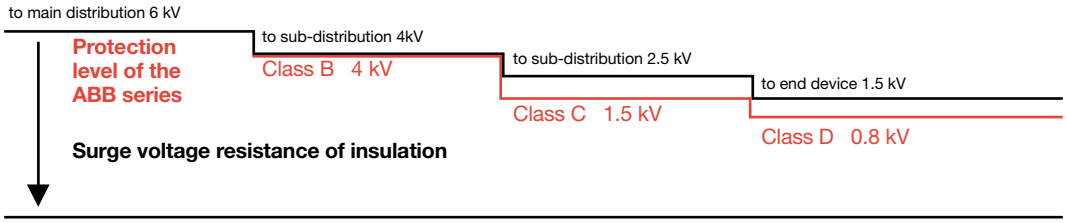
- Achieve the highest possible degree of safety for your electronic systems and equipment with the 3-level protection concept (coarse, medium and fine protection)
- Minimal maintenance
- Prevent downtime
- Minimize consequential costs of failures
- Block surges from the line side
- Easy and fast installation

Protection concept and installation examples

Example of a three-level mains protection concept in the case of direct lightning strikes or uncontrolled switching operations:



Protection levels of surge voltage arrester per DIN VDE 0110



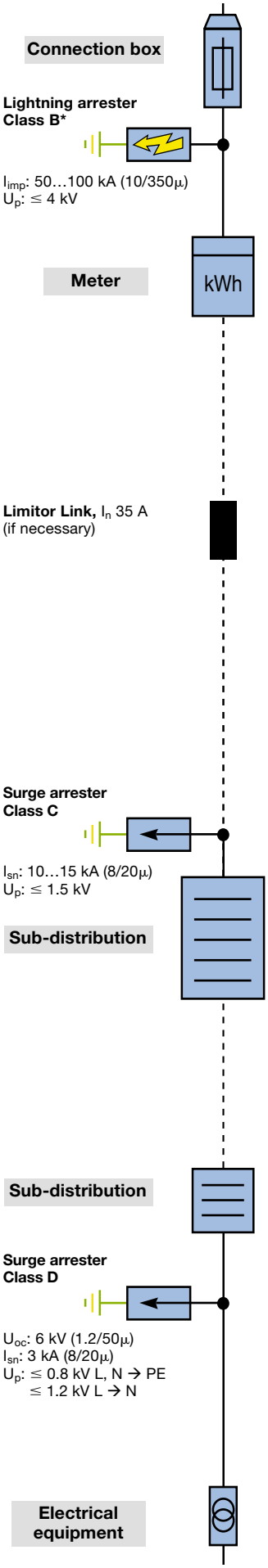
Arrester combinations

Recommended protection concept in case of:	Arrangement versions Main distribution 6 kV / Sub-distribution 4 kV / Sub-distribution 2.5 kV	Examples of end devices protected
– **Direct strike (three-level)** B C D	B —L1→ C ⟷L2 D B —L1→ C —L2→ D B EI C —L2→ D B EI C ⟷L2 D	**In households:** • TV • Stereo • Electric kitchen appliances • Personal computer • Washing machine • Dryer • Freezer …
– **Direct strike or switching (two-level)** B C	B —L1→ C B EI C	
– **Remote lightning Switching operation (two-level)** C D	C —L2→ D C ⟷L2 D C —L2→ D C ⟷L2 D	**In industrial plants:** • PLC modules • Industrial computers • Main-frame computers • Control relays • Electronic subassemblies …

Key:

	Class	Installation category:
● Lightning current arrester	→ B	IV
● Surge voltage arrester	→ C	III
● Device protection	→ D	II
● Recommended cable length	L1 → 15 m L2 → 5 m	
● Decoupling inductance	EI	

Product description



Class B Lightning Current Arrester
Single-pole arrester in the specification class B for the protection of electrical consumer installations and equipment in case of overvoltage or direct lightning strikes.

- High discharge capacity
- Gliding spark gap (no blowout)
- For use in installation category IV
- Single-pole version
- Directly mountable on DIN-rails

Limitor Link Decoupling Inductor
Supplies the inductance for energy-control coordination between the lightning current arrester and the surge arrester when the impedance of the lines connecting these components does not provide sufficient damping (The required cable length for the energetic coordination is 15 m).

- Easy integration with the other components
- Directly mountable on DIN-rails

Class C Surge Arrester
Single-pole arrester in the specification class C for the protection of electrical consumer installations and equipment against overvoltage caused by distant lightning strikes or switching operations.

- High discharge capacity due to powerful metal-oxide varistor
- Integrated thermal monitoring device
- Depending on the type, with integrated remote indication (TS = Télésignal)
- Red mark in the monitoring window indicates defect
- For use in installation category III
- Single-pole version
- Plug-in version
- Small 17.5 mm size available in DIN-measure
- Directly mountable on DIN-rail

Class D Surge Arrester for Device Protection
Double-pole arrester in the specification class D for the protection of electrical installations against overvoltage caused by distant lightning strikes or switching operations.

- Y-connection (2 varistors and 1 gas-filled arrester)
- Integrated thermal monitoring device
- For use in installation category II
- LED status indicator (green = OK; red = defective)
- Depending on the type, with integrated remote indication (TS = Télésignal) and/or acoustic signal (AS)
- Small 17.5 mm size in DIN-measure
- Directly mountable on DIN-rail

*** for B-arresters, which are installed in front of the meter, the approval of the respective energy company must generally be obtained!**

Technical data and order information

Lightning current arrester (Class B)

Lightning impulse curr. I_{imp} kA (10/350µs)	Protection level U_p kV	**Type**	E no.	Order no.	Weight in kg	Units per pack
non-blowout						
50	4	**Limitor-NB-B**	808 421 002	GH E441 0042 R0255	0.35	1
100	4	**Limitor-GN-B** (N-PE arrester)	808 421 102	GH E441 0022 R0255	0.25	1

Decoupling inductor

Rated current I_n A	Rated inductance L_N µH	**Type**	E no.	Order no.	Weight in kg	Units per pack
35	15	**Limitor Link**	808 430 002	GH E441 0000 R0035	0.52	1

Surge arrester (Class C)

Rated impulse current I_{sn} kA (8/20µs)	Protection level U_p kV	**Type**	E no.	Order no.	Weight in kg	Units per pack
10	1.3	**Limitor V**	987 910 108	GH E441 0001 R0001	0.105	1
10	1.3	**Limitor VTS**	808 415 102	GH E441 1001 R0275	0.110	1
15 (pluggable)	1.5	**Limitor VE**	808 411 002	GH E441 0101 R0275	0.110	1
15 (pluggable)	1.5	**Limitor VETS**	808 415 002	GH E441 1101 R0275	0.115	1
20 (pluggable)	1.5	**Limitor GE-C**	808 411 102 (N-PE arrester)	GH E441 0111 R0255	0.120	1
15	1.5	**Plug-in unit for VE/VETS**	808 411 202	GH E440 0101 R0275	0.045	1
20	1.5	**Plug-in unit for GE-C**	808 411 112	GH E440 0111 R0255	0.035	1

Surge arrester (Class D)
(For 230 V TN and TT networks)

Open-circuit voltage U_{oc} / Rated impulse current I_{sn} kV/kA (8/20µs)	Protection level U_p kV	**Type**	E no.	Order no.	Weight in kg	Units per pack
6/3	1)	**Limitor VD**	808 402 002	GH E442 0073 R0260	0.066	1/10
6/3		**Limitor VDTS**	808 405 002	GH E442 1073 R0260	0.070	1/10
6/3		**Limitor VDAS**	808 402 102	GH E442 2073 R0260	0.070	1/10
6/3		**Limitor VDTAS**	808 402 202	GH E442 3073 R0260	0.075	1/10

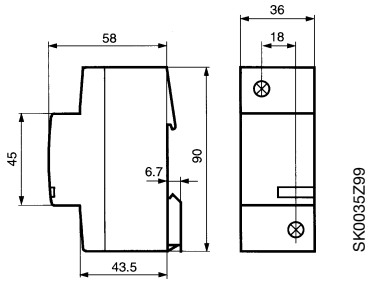
1) Type of protection L, N → PE 0.8 kV
L → N 1.2 kV

Key
E = Plug-in unit
TS = Remote indication (Télésignal)
AS = Acoustic signal
TAS = Remote indication and acoustic signal

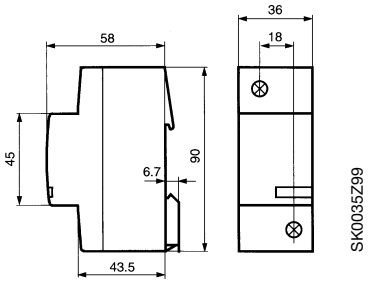
Dimensions in mm

Lightning current arrester (Class B)

Limitor NB-B

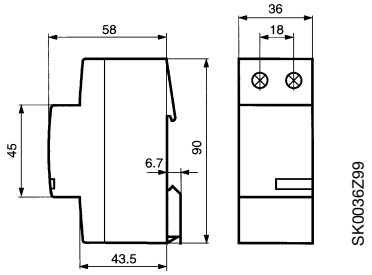


Limitor GN-B



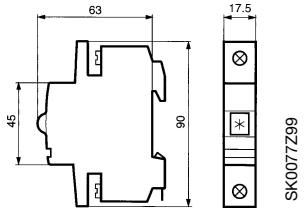
Decoupling inductor

Limitor Link

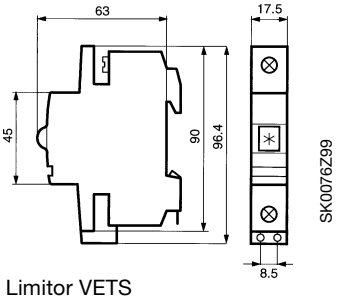


Surge arrester (Class C)

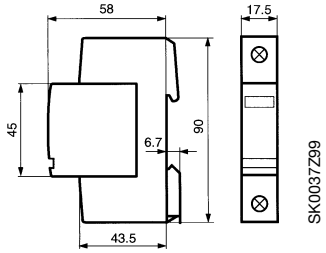
Limitor V



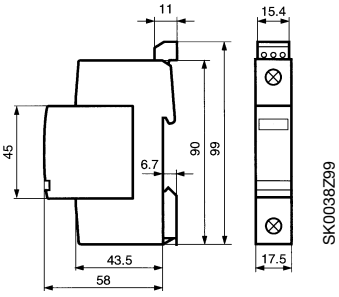
Limitor VTS



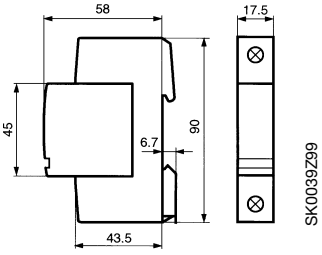
Limitor VE



Limitor VETS

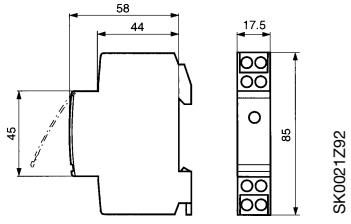


Limitor GE-C

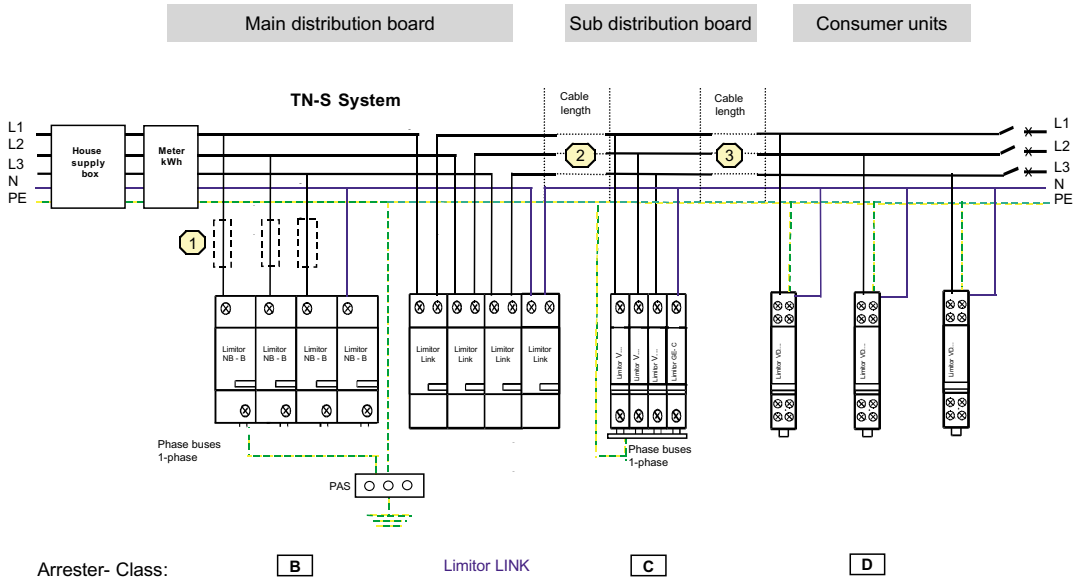


Surge arrester (Class D)

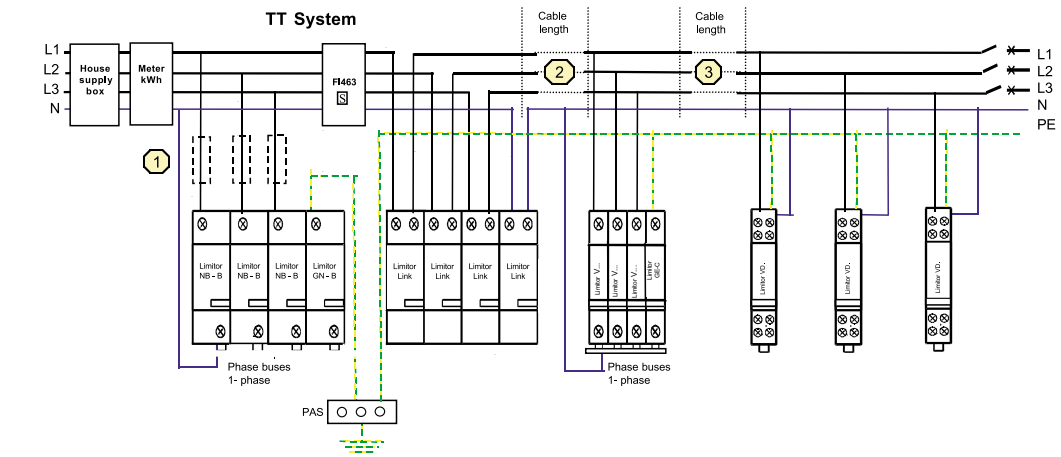
Limitor VD/VDAS/VDTS/VDTAS



Examples of installation



Arrester- Class:	B	Limitor LINK	C	D
Inst.- Kat.:	IV	(inductance decoupling)	III	II



Arrester- Class:	B	Limitor LINK	C	D
Inst.- Kat.:	IV	(inductance decoupling)	III	II

1. For short-circuit mechanismes for each arrester type refer detailed description in the technical documentation
2. Co-ordination between B and C arrester: at least 15m cable length or Limitor LINK
3. Co-ordination between C and D arrester: at least 5m cable length

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