



Surge Protection Devices

Surge Voltage - What is it and what are its effects?

Surge Voltages are short, pulse like, voltage peaks with steep rising edges and are also known as transients. The origin of transient overvoltages may be atmospheric (lightning) or internal – switching.

Lightning Surges

Particular buildings or structures for reasons which could include geographical location, type of construction or height above ground level are susceptible to direct lightning strikes.

The flow of discharge current through an unprotected building subjected to a direct lightning strike would certainly be catastrophic, resulting in damage and fire. The first line of defence for structures vulnerable to this type of event is a Lightning Protection System (LPS) designed to capture and safely conduct discharge current. However the overall effects of such an event may not be managed to a tolerable level solely by a structural LPS and sensitive equipment within will still require protection from transient overvoltage. The destructive effects of lightning are not restricted to direct strikes. The secondary effects of lightning strikes to ground, upon electrical distribution infrastructure or within clouds can account for some of the most extreme forms of transient overvoltage and the subsequent damage to an electrical installation and its connected electrical / electronic equipment.



Switching Surges

While the phrase "more likely to be struck by lightning" may be, in the UK, used to emphasize the infrequency of an event or phenomenon it certainly could not be applied to the constant exposure to transients endured by electronic and electrical equipment as a result of network switching operations. Transients of sufficiently high peak values as to pose a danger to equipment can be initiated each time an inductive load is switched on, or off. This type of transient overvoltage, or switching surge, can be caused by the switching of motors, transformers, or the interruption of a short circuit by protective measures. The magnitude of a transient generated in this way may be significantly lower than that generated by a lightning event but the frequency of their occurrence far greater.

Effects of transient overvoltage

Regardless of origin, the consequences of transient overvoltage to an installation afforded no protection are ultimately the same. Unchecked long term exposure to lower levels of transient overvoltage can reduce the lifespan of electronic components. Exposure to higher levels can result in immediate damage in the form of burnt out circuit boards. Voltage dependent equipment that forms part of the fixed electrical installation is vulnerable. Loss of precious data, costly equipment replacement and interruption of work patterns are all real results of transient overvoltage.

BS7671 Requirements - AQ criteria

"Protection against overvoltage of atmospheric origin or due to switching" is outlined within Section 443 of BS7671.

Regulation 443.2.1 explains that where an installation is supplied by a low voltage system containing no overhead lines, no additional protection against overvoltage of atmospheric origin is necessary if the impulse withstand of equipment is in accordance with Table 44.3

Regulation 443.2.2 explains that where an installation is supplied by a low voltage network which includes overhead lines or where the installation includes an overhead line and in either case the condition of external influence AQ1 exists, no additional protection against overvoltage of atmospheric origin is necessary **if the impulse withstand of equipment is in accordance with Table 44.3**

The AQ classification places a value upon the number of thunderstorm days per year, the external influence, and subsequent possibility of lightning strikes. The condition of external influence that exists across the United Kingdom is AQ1 - less than or equal to 25 thunderstorm days per year. This value is defined within BS7671 Appendix 5 as "negligible". Installations within the UK are not required to include Surge Protective Devices based solely upon this criterion.

With respect to 443.2.2 an important note is made that identifies applications where higher reliability or higher risk protection against overvoltage may be necessary irrespective of the AQ value.

Section 443 does recognize that for most installations transient overvoltages are not managed to acceptable levels downstream in instances when they do occur. As identified within the scope and objective of this section, further referenced within AQ based regulatory requirement, for the 'no additional protection' statement to apply **the impulse withstand of an installation and its connected equipment must be in accordance with Table 44.3**

REQUIRED MINIMUM IMPULSE WITHSTAND VOLTAGE, Uw

CATEGORY	EXAMPLES OF IMPULSE CATEGORY EQUIPMENT	NOMINAL VOLTAGE OF THE INSTALLATION, V	REQUIRED MINIMUM IMPULSE WITHSTAND VOLTAGE, kV
I	Equipment intended to be connected to the fixed electrical installations, e.g. household appliances, portable tools, etc. Measures have been taken to limit transient overvoltages.	230/240 277/480	1.5
II	Equipment intended to be connected to the fixed electrical installations, e.g. household appliances, portable tools, etc. The protective means are either within or external to the equipment.	230/240 277/480	2.5
III	Equipment which is part of the fixed electrical installations and other equipment where a high degree of availability is expected, e.g. distribution boards, circuit breakers, wiring systems and equipment for industrial use, stationary motors with permanent connection to the fixed installation.	230/240 277/480	4
IV	Equipment intended to be used at or in the proximity of the electrical installation upstream of the main distribution board, e.g. electrical meter, primary overcurrent device, ripple control units.	230/240 277/480	6

The information seen within this table is based upon that which can be found within BS7671, tables 44.3 and 44.4, categorizing examples of household equipment and providing their related minimum required values of impulse withstand voltage between live conductors and PE.

It is in the very nature of 21st century living that our work and leisure activities regularly involve use of electronic equipment. We store our data electronically, either personal or professional, within the home or office. Our connection to all forms of media whether it be social, entertainment or commercial, is distributed around our homes for interaction and consumption via telephone, tablet, PC and television. The white goods within our kitchens and laundries have the capability to be programmed and timed; we manipulate their speed and temperature all of this via embedded electronics. This reliance upon technology takes not only considerable financial investment but forms an intrinsic part of our modern lifestyle.

- Can we really ever be sure that regulatory requirement precludes inclusion of surge protective devices within our electrical installations?
- Can we always be sure that the impulse withstand voltage of equipment that supports our day to day living is actually as robust as table 44.3 requires?
- Are we really that confident in the predictability of British weather patterns or that switching operations that are out of our control will have no effect upon our place in the distribution network?



Can you establish if all the electrical equipment has an impulse withstand of 2.5kV?

Surely a wholly more proactive approach in countering the threat posed by overvoltage, from sources both ancient and modern, is to include Surge Protective Devices as a matter of course and safeguard our most valued possessions.

BS7671 Alternative to the AQ Criteria

Regulation 443.2.4 does specify an important alternative to the AQ based criteria seen within 443.2.2 and 443.2.3. This is based upon a risk assessment and requires consideration be given to the following consequential levels of protection.

- 1. Consequences related to human life
- 2. Consequences related to public services
- 3. Consequences to commercial or industry activity

For levels 1 – 3 above, protection against overvoltage **shall be provided.**

Here, Note 2 explains that any risk assessment calculation applied to these three levels of consequence will always lead to the same result. **Surge protection is required.**

Hospitals, Public Buildings, Infrastructure, Industrial Sites, Commercial Buildings, Farms and Service Industry buildings are all vulnerable due to the sensitive nature of the equipment that they contain and are required to be afforded appropriate protection.

- 4. Consequences to groups of individuals
- 5. Consequences to individuals

For levels 4 - 5 above the requirement for protection against overvoltage shall be dependent upon the results of a calculation. BS7671 describes the calculation method to establish the conventional length of the supply line to the considered structure (d) compared to the critical length (dc).

In the UK BS EN 62305 provides a comprehensive risk assessment based system for lightning protection. This includes protection for electrical and electronic systems using a number of methods including surge protective devices. This standard comprises a four part series – General principles, Risk management, Physical damage to Structures and life hazard and Electrical and electronic systems within structures.

British Standards and IEE regulations are subject to change and amendments. This guide to Wylex Surge Protection Devices is not a substitute for the regulations which should always be used for all types of electrical installation design and installation work.

TYPE 1 LIGHTNING ARRESTERS

Type 1 Lightning Arresters are installed at an electrical installations intake position in conjunction with an external Lightning Protection System. These devices have a high impulse current withstand (10/350µs) associated with direct lightning strikes.





 LIST NO.
 DESCRIPTION

 NHSPD4123T1
 2 mod DIN mounting SPD with remote indication contact



TN-S/TT Single Phase Supply -Separate Protective Earth & Neutral



5 CONDUCTOR SYSTEM; L1, L2, L3, N, PE

LIST NO.	DESCRIPTION
NHSPD4143T1	$4 \mbox{ mod}$ DIN mounting SPD with remote indication contact



TN-S/TT Three Phase Supply -Separate Protective Earth & Neutral



LIST NO. DESCRIPTION NHSPD4113T1 1 mod DIN mounting SPD with remote indication contact



TN-C Single Phase Supply -Common Protective Earth & Neutral

Image: Nick of the sector of

NHSPD4113T1

4 CONDUCTOR SYSTEM; L1, L2, L3, PEN

NHSPD4133T1	3 mod DIN mounting SPD with remote indication contact
LIST NO.	DESCRIPTION



TN-C Three Phase Supply -Common Protective Earth & Neutral

TYPE 1 LIGHTNING ARRESTERS FEATURES, BENEFITS & TECHNICAL DATA

- Plug-In Lightning Arresters
- Disconnect facility for each individual module
- Visual end of life indication for each module
- Remote Indication auxiliary contact
- · Mechanical keying of all slots

- IEC61643-1 / EN61643-11
- DIN rail mounting
- Temperature Range -40... +80°C
- IP20

Protective system

Lightning protection level

Nominal voltage U_N

Protection level Up

Maximum backup fuse Ø minimum L, N, PE

Ø maximum L, N, PE

Protective system

Lightning protection level

Nominal voltage U_N

Protection level U_P

Maximum backup fuse Ø minimum L, N, PE

Ø maximum L, N, PE

Highest continuous voltage U_c

Highest continuous voltage U

Lightning test current $\,I_{MP}\,(10/350)\,\,\mu s$ per path Nominal discharge surge current $\,I_{N}\left(8/20\right)\,\mu s$ per path

Maximum discharge surge current $\,I_{\text{MAX}}(8/20)$ μs per path

 U_{TOV} (withstand, 5 sec. (L-N)/withstand, 200 msec. (N-PE)

Maximum discharge surge current $I_{MAX}(8/20)$ µs per path

U_{TOV} (withstand, 5 sec. (L-N)/withstand, 200 msec. (N-PE)

Short circuit resistance I_{P} with maximum backup fuse

Short circuit resistance IP with maximum backup fuse

· Replacement plug in modules are available

(L-N) 335 V a.c. 50/60 Hz

(L-N) 12.5 kA

(L-N) 50 kA

 $(L-N) \leq 1.2 \text{ kV}$

(L-N) 415 V a.c

1.5mm² (solid)

35mm² (solid)

(L-N) 335 V a.c. 50/60 Hz

NHSPD4123T1 TN-S / TT / TN-C L, N, PE

111, IV

240 V a.c. (230/400 V a.c. ... 240/415 V a.c.) 50/60 Hz

(L-N) 12.5 kA / 6.25 As / 39 kJ/Ω (N-PE) 50 kA / 25 As / 625 kJ/Ω

25 kAM 160 A gL/gC

NHSPD4143T1

TN-S / TT LI, L2, L3, N, PE

111, IV

240 V a.c. (230/400 V a.c. ... 240/415 V a.c.) 50/60 Hz

L-N 12.5 kA

L-N 50 kA

 $L-N \leq 1.2 \text{ kV}$

L-N 415 V a.c.

25 kAms

160 A gL/gG

1.5mm² (stranded)

25mm² (stranded)

1.5mm² (solid)

35mm² (solid)

(N-PE) 264 a.c. 50/60 Hz

(N-PE) 50 kA

(N-PE) 50 kA

 $(\text{N-PE}) \leq 1.7 \text{ kV}$

(N-PE) | 200 V a.c

1.5mm² (stranded)

25mm² (stranded)

(N-PE) 264 a.c. 50/60 Hz

NHSPD4123T1
Total width 35.8mm

NHSPD4143T1



NHSPD4113T1





NHSPD4133T1 Total width 53.7mm



	D4133T1	
Protective system	TN-C L, PEN	
Lightning protection level	+ V	
Highest continuous voltage U _C	335 V a.c	:. 50/60 Hz
Nominal voltage U _N	240 V a.c. (230/400 V a.c 240/415 V a.c.) 50/60 Hz	
Lightning test current $I_{MP}(10/350)$ µs per path	L-PEN 12.5 kA / 6.25 As / 39 kJ/Ω	
Nominal discharge surge current $I_{_{\rm N}}(8/20)\;\mu s$ per path	L-PEN 12.5 kA	
Maximum discharge surge current $I_{MAX}(8/20)\mu s$ per path	L-PEN 50 kA	
Protection level U _P	≤ 1.2 kV	
U _{TOV} (withstand, 5 sec. (L-N)/withstand, 200 msec. (N-PE))	i)) 415 V a.c.	
Short circuit resistance I_{P} with maximum backup fuse	25 kA _{MS}	
Maximum backup fuse	I 60 A gL/gG	
Ø minimum L, N, PE	I.5mm ² (solid)	1.5mm ² (stranded)
Ø maximum L, N, PE	35mm² (solid)	25mm ² (stranded)

TYPE 2 SURGE ARRESTERS

Type 2 Surge Arresters provide protection against overvoltage originating from switching and the secondary effects of lightning strikes. These devices will discharge current having an 8/20µs waveform and provide a low voltage protection level of \leq 1.5kV (Up) for sensitive electronic equipment exceeding the requirements for category II equipment identified within table 44.3 (BS7671).





3 CONDUCTOR SYSTEM; L, N, PE

LIST NO.	DESCRIPTION
NHSPD4611T2	2 conductor system; L, N / PEN
NHSPD4810T2	Spark gap; N-PE



TN-S/TT Single Phase Supply -Separate Protective Earth & Neutral

5 CONDUCTOR SYSTEM; L1, L2, L3, N, PE

LIST NO.	DESCRIPTION
NHSPD4641T2	4 mod DIN mounting SPD with remote indication contact



TN-S/TT Three Phase Supply -Separate Protective Earth & Neutral

2 CONDUCTOR SYSTEM; L, PEN

LIST NO. DESCRIPTION NHSPD4611T2 2 conductor system; L, N / PEN



TN-C Single Phase Supply -Common Protective Earth & Neutral

Image: New YorkNHSPD4631T2

NHSPD4611T2

4 CONDUCTOR SYSTEM; L1, L2, L3, PEN

NHSPD4631T2	3 mod DIN mounting SPD with remote indication contact
LIST NO.	DESCRIPTION



TN-C Three Phase Supply -Common Protective Earth & Neutral

TYPE 2 SURGE ARRESTERS FEATURES, BENEFITS & TECHNICAL DATA

- Plug-In Surge Arresters
- Disconnect facility for each individual module
- Visual end of life indication for each module
- Remote Indication auxiliary contact
- Mechanical keying of all slots

NHSPD4611T2 + NHSPD4810T2



NHSPD4641T2



NHSPD4611T2



 NHSPD4631T2

 Total width 53.4mm

 12 0 9 14

 110 FM

 110 FM

• IEC61643-1 / EN61643-11

- DIN rail mounting
- Temperature Range -40... +80°C
- IP20
- Replacement plug in modules are available

	NHSPD4611T2	NHSPD4810T2	
Protective system TN-S / TT / TN-C / IT		/ TN-C / IT	
Rated surge arrester voltage U_C	L-N / L-PEN 350 V a.c.	N-PE 260 V a.c.	
Nominal voltage U _N	230 240 \	230 240 V a.c. 50/60 Hz	
Nominal discharge current I _N (8/20) µs	20 kA		
Maximum discharge current I _{MAX} (8/20) µs	40 kA		
Protection level U _P	≤1.4 kV	≤1.5 kV	
Maximum backup fuse	I 25 A gL	-	
Short circuit resistance $ {\sf I}_{ {\sf P}}$ with max. backup fuse	25 kA _{ms}	-	
Ø minimum L, N, PE	2.5mm ² (solid)	2.5mm ² (stranded)	
Ø maximum L, N, PE	35mm² (solid)	25mm ² (stranded)	

	NHSPD4641T2		
Protective system	TN-	TN-S / TT	
Rated surge arrester voltage U_C	L-N 350 V a.c.	L-N / N-PE 350 V a.c. / 260 V a.c.	
Nominal voltage U _N	230/240 V a.c 24	230/240 V a.c 240/415 V a.c. 50/60 Hz	
Nominal discharge current $I_N(8/20) \mu s$	20	20 kA	
- Maximum discharge current Ι _{MAX} (8/20) μs	40	40 kA	
Protection level U _P	L-N ≤1.4 kV	L-N / N-PE ≤1.4 kV / ≤1.5 kV	
Lightning peak current $I_{MP}(10/350)\mu s$	L-N 3 kA	L-N / N-PE 3 kA / 12 kA	
Maximum backup fuse	125	125 A gL	
Short circuit resistance I_P with max. backup fuse	25	25 kA _{rms}	
Ø minimum L, N, PE	2.5mm ² (solid)	2.5mm ² (stranded)	
Ø maximum L, N, PE	35mm² (solid)	25mm ² (stranded)	

	NHSPD4611T2		
Protective system	TN-S / TT	TN-S / TT / TN-C / IT	
Rated surge arrester voltage $U_{\rm C}$	L-N / 350	L-N / L-PEN 350 V a.c.	
Nominal voltage U _N	230 240 V	230 240 V a.c. 50/60 Hz	
Nominal discharge current I _N (8/20) µs	20	20 kA	
Maximum discharge current Ι _{MAX} (8/20) μs	40	40 kA	
Protection level U _P	≤ .	≤1.4 kV	
Maximum backup fuse	125	125 A gL	
Short circuit resistance I_P with max. backup fuse	25	25 kA _{ms}	
Ø minimum L, N, PE	2.5mm ² (solid)	2.5mm ² (stranded)	
Ø maximum L, N, PE	35mm ² (solid)	25mm ² (stranded)	

NHSPD4631T2	
ctive system TN-C	
L-PEN 350 V a.c.	
230/240 V a.c 240/415 V a.c. 50/60 Hz	
20 kA	
40 kA	
≤1.4 kV	
L-PEN 3 kA	
125 A gL	
25 kA _{ms}	
2.5mm ² (solid)	2.5mm ² (stranded)
35mm ² (solid)	25mm ² (stranded)
	NHSPL Th L-F 350 230/240 ∨ a.c 240 20 40 ≤1 125 2.5mm² (solid) 35mm² (solid)

TYPE 1 + 2 LIGHTNING / SURGE ARRESTER COMBINATIONS

Type 1+2 Surge Arresters combine the benefits of both type 1 and type 2 having both high impulse current withstand (10/350µs) associated with direct lightning strikes and a low voltage protection level of \leq 1.5kV (Up) exceeding the requirements for category II equipment identified within table 44.3 (BS7671).





 LIST NO.
 DESCRIPTION

 NHSPD4421T12
 4 mod DIN mounting SPD with remote indication contact



TN-S/TT Single Phase Supply -Separate Protective Earth & Neutral



5 CONDUCTOR SYSTEM; L1, L2, L3, N, PE

 LIST NO.
 DESCRIPTION

 NHSPD4441T12
 8 mod DIN mounting SPD with remote indication contact



TN-S/TT Three Phase Supply -Separate Protective Earth & Neutral



LIST NO. DESCRIPTION NHSPD4411T12 2 mod DIN mounting SPD with remote indication contact



TN-C Single Phase Supply -Common Protective Earth & Neutral

NHSPD4411T12

4 CONDUCTOR SYSTEM; L1, L2, L3, PEN

LIST NO. DESCRIPTION

NHSPD4431T12 6 mod DIN mounting SPD with remote indication contact



TN-C Three Phase Supply -Common Protective Earth & Neutral

TYPE 1 + 2 LIGHTNING / SURGE ARRESTER COMBINATION FEATURES, BENEFITS & TECHNICAL DATA

- Plug-In Lightning and Surge Arresters
- Disconnect device for each individual module
- · Visual end of life indication for each module
- Remote Indication auxiliary contact
- Mechanical keying of all slots

- IEC61643-1 / EN61643-11
- DIN rail mounting
- Temperature Range -40... +80°C
- IP20
- · Replacement plug in modules are available

Total width 71.6mm

¹² Q 9 ¹⁴ 110 FM

NHSPD4421T12 TN-S / TT LI, N, PE Protective system Lightning protection level 111 / IV, 50 kA 350 V a.c. 50/60 Hz maximum continuous operating voltage U_c 230/400 V a.c. ... 240/415 V a.c. 50/60 Hz Nominal voltage U_N Rated load current IL 125 A (T_A = 55°C) Lightning peak current $I_{MP}(10/350) \ \mu s$ (L-N) 25kA (N-PE) 100kA Nominal discharge current $\,I_{N}\left(8/20\right)\,\mu s$ (L-N) 25kA (N-PE) 100kA Protection level $U_{\mbox{\tiny P}}$ \leq 1.5 kV 25 kA_{RMS} Short circuit resistance with maximum backup fuse I_P 25 kA (264 V a.c.) Follow current limitation Maximum back-up fuse Application A: 125 A gL/gG Application B: 315 A gL/gG Ø minimum L, N, PE 2.5mm² (solid) 2.5mm² (stranded) 25mm² (stranded) Ø maximum L, N, PE 35mm² (solid)

	NHSPD4441112	
Protective system	TN-S L1, L2, L3	/ TT ;, N, PEN
Lightning protection level	I, 100 kA	
maximum continuous operating voltage U _C	350 V a.c. 50/60 Hz	
Nominal voltage U _N	230/400 V a.c 240/415 V a.c. 50/60 Hz	
Rated load current I _L	125 A (T _A = 55°C)	
Lightning peak current Ι _{MP} (10/350) μs	(L-N) 25 kA	(N-PE) 100kA
Nominal discharge current I _N (8/20) µs	(L-N) 25 kA	(N-PE) 100kA
Protection level U _P	≤ .:	5 kV
Short circuit resistance with maximum backup fuse I_P	25 kA _{RMS}	
Follow current limitation	25 kA (264 V a.c.)	
Maximum back-up fuse	Application A: 125 A gL/gG	Application B: 315 A gL/gG
Ø minimum L, N, PE	2.5mm² (solid)	2.5mm ² (stranded)
Ø maximum L, N, PE	35mm² (solid)	25mm ² (stranded)
	Protective system Lightning protection level maximum continuous operating voltage U _c Nominal voltage U _N Rated load current I _L Lightning peak current I _{VP} (10/350) µs Nominal discharge current I _{NV} (8/20) µs Protection level U _P Short circuit resistance with maximum backup fuse I _P Follow current limitation Maximum back-up fuse Ø minimum L, N, PE Ø maximum L, N, PE	NHSPD Protective system TN-S Li, Li, Li, Li, Li Li, Li, Li, Li Lightning protection level I, IO maximum continuous operating voltage U _C 350 V a.c. Nominal voltage U _N 230/400 V a.c 240 Rated load current I _L 125 A (T, Lightning peak current I _{NP} (10/350) µs (L-N) 25 kA Nominal discharge current I _N (8/20) µs (L-N) 25 kA Protection level U _P ≤ 1.5 Short circuit resistance with maximum backup fuse I _P 25 kA (2i Maximum back-up fuse Application A: 125 A gL/gG Ø minimum L, N, PE 2.5mm² (solid) Ø maximum L, N, PE 35mm² (solid)

	NHSPD	4411T12
Protective system	TN-C LI, PEN	
Lightning protection level	111 / IV, 50 kA	
maximum continuous operating voltage U _C	350 V a.c. 50/60 Hz	
Nominal voltage U _N	240/415 V a.c. 50/60 Hz	
Lightning peak current I _{MP} (10/350) µs	25 kA	
Nominal discharge current I _N (8/20) µs	25 kA	
Protection level U _P	≤ 1.5 kV	
Short circuit resistance with maximum backup fuse I _P	25 kA _{Ms}	
Follow current limitation I _F	3 kA (350 V)	25 kA (264 V)
Maximum back-up fuse	Application A: 125 A gL/gG	Application B: 315 A gL/gG
Ø minimum L, N, PE	2.5mm ² (solid)	2.5mm ² (stranded)
Ø maximum L, N, PE	35mm ² (solid)	25mm ² (stranded)



	14137 04431112	
Protective system	TN-C L I , L2, L3, PEN	
Lightning protection level	I, IC	10 kA
maximum continuous operating voltage U _C	350 V a.c. 50/60 Hz	
Nominal voltage U _N	230/400 V a.c 240/415 V a.c. 50/60 Hz	
Rated load current I _L	125 A (T _A = 55°C)	
Lightning peak current I _{MP} (10/350) µs	(L-PEN) 75 kA	
Nominal discharge current I _N (8/20) µs	(L-PEN) 75 kA	
Protection level U _P	≤ 1.5 kV	
Short circuit resistance with maximum backup fuse I_P	25 kA _{RMS}	
Follow current limitation	25 kA (264 V a.c.)	
Maximum back-up fuse	Application A: 125 A gL/gG	Application B: 315 A gL/gG
Ø minimum L, N, PE	2.5mm ² (solid)	2.5mm ² (stranded)
Ø maximum L, N, PE	35mm ² (solid)	25mm ² (stranded)

NHSPD4411T12



NHSPD4441T12 Total width 142.8mm

C

TYPE 2 SURGE ARRESTER FOR PHOTO VOLTAIC SYSTEMS



INSULATED OR GROUNDED PV APPLICATIONS UP TO 1000V DC



TYPE 2 SURGE ARRESTER FOR PHOTO VOLTAIC SYSTEMS TECHNICAL DATA



	NHSP	D4831T2	
Requirement class	C acc. to E D SPD class I I ac SPD Type 2 acc	DIN VDE 0675-6; cc. to IEC 61643-1; c. to EN 61643-11;	
Maximum string voltage U _{OC STC}	100	0 V d.c.	
Short circuit current I _{SC STC}	80	80 A d.c.	
Nominal discharge current I _N (8/20) µs		5 kA	
Maximum discharge current I _{MAX} (8/20) µs	3	30 kA	
Protection level U _P	≤	5 kV	
Operating temperature range	-40°C	-40°C +80°C	
Degree of protection		IP20	
Ø minimum L, N, PE	2.5mm ² (solid)	2.5mm ² (stranded)	
Ø maximum L, N, PE	35mm ² (solid)	25mm ² (stranded)	



REPLACEMENT PLUGS

LIST NO.	DESCRIPTION	
NHSPD4182T1	T1 N-PE GDT plug 50kA NHSPD4123T1 NHSPD4143T1	
NHSPD4183T1	T1 L-N varistor plug 12.5kA NHSPD4123T1 NHSPD4143T1 NHSPD4133T1 NHSPD4113T1	
NHSPD4481T12	T1 L-N spark gap plug 25kA NHSPD4431T12 NHSPD4411T12 NHSPD4421T12 NHSPD4441T12	
NHSPD4281T12	T2 L-N varistor plug 20kA NHSPD4431T12 NHSPD4411T12 NHSPD4421T12 NHSPD4441T12	
NHSPD4180T12	T1 N-PE spark gap plug 100kA NHSPD4421T12 NHSPD4441T12	
NHSPD4981T2	T2 L-N varistor plug 15kA NHSPD4831T2	
NHSPD4681T2	T2 L-N varistor plug 20kA NHSPD4641T2 NHSPD4611T2 NHSPD4631T2	
NHSPD4880T2	T2 N-pe GDT plug 20kA (12.5kA) NHSPD4810T2 NHSPD4641T2	

Surge and lightning arresters have a lifespan directly related to the number and magnitude of their operations.

All Wylex devices provide visual life status indication.

The plug in unit must be removed during installation insulation resistance testing.

WHEN SHOULD WE INSTALL SURGE PROTECTION DEVICES?



Consumer Unit fitted with Type 2 Surge Protection connected at the main switch

~

RC

VYLE)

Wylex Lightning and surge arresters can be provided as an integral part of many single phase NH consumer units where they can afford protection against transient overvoltage originating from either an atmospheric or switching event.

CUSTOM BUILT

To address the ever changing requirements of the modern electrical installation Wylex offer a custom build service for all of the catalogued range of NH domestic circuit protection products. These can be modified or pre assembled to meet particular customer specification.

These modifications can include not only Surge and Lightning arresters but also circuit protective devices, personalised labelling and DIN mounting control devices such as contactors, time switches or bell transformers.

The custom built option can save time on site, reduce labour cost and contribute to a trouble free installation process.



Separately mounted enclosure housing a Type 1 Lightning Arrester

In many situations it may not be practical or desirable to include lightning and surge arresters within consumer units.

Mounting devices in their own enclosure or as part of a separate assembly is another option.



Wylex Panelboards include a range of

catalogued lightning and surge arrester kits that enable on site customization of this commercial distribution system. Type 1, 2 and 1+2 devices can be applied and mounted integrally within the framework of any Wylex Panelboard. All necessary steelwork and interconnections are included within the SPD kits.

Also available are an extensive range of standard meter kits, cableways, control module enclosures and door kits giving installers the ability to provide bespoke on site solutions from standard catalogued components.



ELECTRIUM SALES LIMITED A SIEMENS COMPANY Commercial Centre, Lakeside Plaza, Walkmill Lane, Bridgtown, Cannock WS11 0XE. eMail: info@electrium.co.uk Web: www.electrium.co.uk UK SALES Telephone: 01543 455010 Facsimile: 01543 455011 eMail: wylex.sales@electrium.co.uk TECHNICAL Telephone: 01543 438310 Facsimile: 01543 438311 eMail: wylex.technical@electrium.co.uk EXPORT SALES Telephone: +44 1543 455049 Facsimile: +44 1543 455048 eMail: export@electrium.co.uk

Although every effort has been made to ensure accuracy in the compilation of the technical detail within this publication, specifications and performance data are constantly changing. Latest details can be obtained from Wylex.

Publication No.WY2152 1/14 Printed in England.