

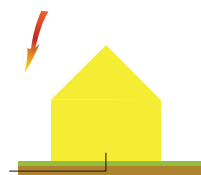


QUICK SELECTION GUIDE 2019/2020



Risk of indirect lightning stroke

Situation

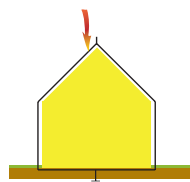


Building without external lightning protection system and ground wire connection. Starting with SPDs type 2 in the main distribution.

Point of installation

Apartment buildings/hospitals, industrial/commercial
Distance main / sub distribution or combined distribution: > 10 m

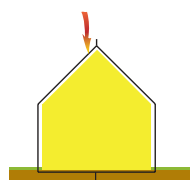
< 10 m



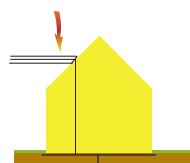
Building with external lightning protection system (according to EN 62305). Starting with SPDs type 1 + ... in the main distribution.

Buildings with lightning protection class III and IV (eg residential - commercial and office buildings)
Distance from the main distribution / sub-distributor or combined distribution: > 10 m

< 10 m

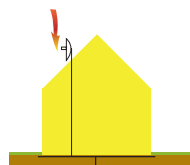


Buildings with lightning protection class I to IV (eg data centers, industrial buildings and hospitals)
Distance main distribution / sub-distribution: > 10 m



Aerial line connection.

< 10 m or combined distribution

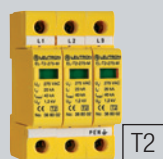


Roof structures are grounded.

Buildings with lightning protection class I to IV (eg data centers, industrial buildings and hospitals)
Distance main distribution / sub-distribution: > 10 m or combined distribution

Main distribution

TNC



EL-T2/3+0-275-FM
(Part no. 38 81 30)
• pluggable
• 3 TE
• Up at In: ≤ 1,2 kV

TNS



EL-T2/4+0-275-FM
(Part no. 38 81 02)
• pluggable
• 4 TE
• Up at In: ≤ 1,2 kV

With remote signal contact (FM)



IPS G T1+2/3+0-300-FM
(Part no. 38 16 17)
• pluggable
• 3 TE
• Up: ≤ 1,5 kV



IPS G T1+2/4+0-300-FM
(Part no. 38 16 23)
• pluggable
• 4 TE
• Up: ≤ 1,5 kV

With remote signal contact (FM)



CT-T1+2/3+0-350-FM
(Part no. 96 00 03)
• pluggable
• 6 TE
• Up: ≤ 1,5 kV

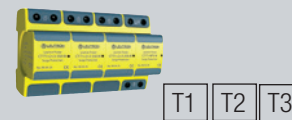


CT-T1+2/3+1-350-FM
(Part no. 96 00 01)
• pluggable
• 8 TE
• Up: ≤ 1,5 kV

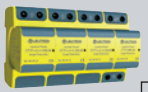
With remote signal contact (FM)



CT-T1+2+3/3+0-350-FM
(Part no. 96 04 05)
• pluggable
• 6 TE
• Up: ≤ 1,0 kV



CT-T1+2+3/3+1-350-FM
(Part no. 96 04 01)
• pluggable
• 8 TE
• Up: ≤ 1,0 kV

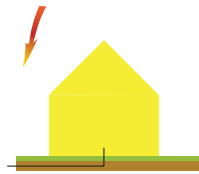
Sub distribution			
TT	TNC	TNS	TT
 EL-T2/3+1-275-FM (Part no. 38 81 16) • pluggable • 4 TE • Up at In: ≤ 1,2 kV	 EL-T2/3+0-275-FM (Part no. 38 81 30) • pluggable • 3 TE • Up at In: ≤ 1,2 kV	 EL-T2/4+0-275-FM (Part no. 38 81 02) • pluggable • 4 TE • Up at In: ≤ 1,2 kV	 EL-T2/3+1-275-FM (Part no. 38 81 16) • pluggable • 4 TE • Up at In: ≤ 1,2 kV
Not needed for cable length < 10 m			
 IPS G T1+2/3+1-300-FM (Part no. 38 16 27) • 4 TE, pluggable • Up: ≤ 1,5 kV (MOV) • Up: ≤ 1,5 kV (GDT)	 EL-T2/3+0-275-FM (Part no. 38 81 30) • pluggable • 3 TE • Up at In: ≤ 1,2 kV	 EL-T2/4+0-275-FM (Part no. 38 81 02) • pluggable • 4 TE • Up at In: ≤ 1,2 kV	 EL-T2/3+1-275-FM (Part no. 38 81 16) • pluggable • 4 TE • Up at In: ≤ 1,2 kV
Not needed for cable length < 10 m			
 CT-T1+2/3+1-350-FM (Part no. 96 00 01)w • pluggable • 8 TE • Up: ≤ 1,5 kV	 EL-T2/3+0-275-FM (Part no. 38 81 30) • pluggable • 3 TE • Up at In: ≤ 1,2 kV	 EL-T2/4+0-275-FM (Part no. 38 81 02) • pluggable • 4 TE • Up at In: ≤ 1,2 kV	 EL-T2/3+1-275-FM (Part no. 38 81 16) • pluggable • 4 TE • Up at In: ≤ 1,2 kV
Not needed for cable length < 10 m			
 CT-T1+2+3/3+1-350-FM (Part no. 96 04 01) • pluggable • 8 TE • Up: ≤ 1,0 kV	 EL-T2/3+0-275-FM (Part no. 38 81 30) • pluggable • Up at In: ≤ 1,2 kV	 EL-T2/4+0-275-FM (Part no. 38 81 02) • pluggable • Up at In: ≤ 1,2 kV	 EL-T2/3+1-275-FM (Part no. 38 81 16) • pluggable • Up at In: ≤ 1,2 kV



Risk of indirect lightning stroke

Situation

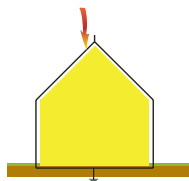
Point of installation



Building without external lightning protection system and ground wire connection.
Starting with SPDs type 2 in the main distribution.

Apartment buildings/hospitals, industrial/commercial
Distance main / sub distribution or combined distribution: > 10 m

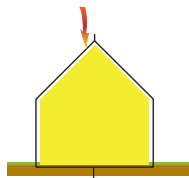
< 10 m



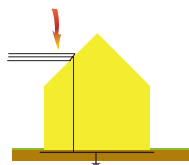
Building with external lightning protection system (according to EN 62305).
Starting with SPDs type 1 + ... in the main distribution.

Buildings with lightning protection class III and IV (eg residential - commercial and office buildings)
Distance from the main distribution / sub-distributor or combined distribution: > 10 m

< 10 m

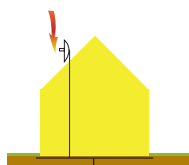


Buildings with lightning protection class I to IV (e.g. data centers, industrial buildings and hospitals)
Distance main distribution / sub-distribution: > 10 m



Aerial line connection.

< 10 m or combined distribution



Roof structures are grounded.

Buildings with lightning protection class I to IV (e.g. data centers, industrial buildings and hospitals)
Distance main distribution / sub-distribution: > 10 m or combined distribution

Main distribution

TNC

TNS

TT



T2

ES 3+0-275-FM
(Part no. 38 14 70)
• pluggable
• 3 TE
• Up at In: ≤ 1,2 kV



T2

ES 4+0-275-FM
(Part no. 38 14 46)
• pluggable
• 4 TE
• Up at In: ≤ 1,2 kV



T2

ES 3+1-275-FM
(Part no. 38 14 80)
• pluggable
• 4 TE
• Up at In: ≤ 1,2 kV

With remote signal contact (FM)



T1 T2

IPS G T1+2/3+0-300-FM
(Part no. 38 16 17)
• pluggable
• 3 TE
• Up: ≤ 1,5 kV



T1 T2

IPS G T1+2/4+0-300-FM
(Part no. 38 16 23)
• pluggable
• 4 TE
• Up: ≤ 1,5 kV



T1 T2

IPS G T1+2/3+1-300-FM
(Part no. 38 16 27)
• 4 TE, pluggable
• Up: ≤ 1,5 kV (MOV)
• Up: ≤ 1,5 kV (GDT)

With remote signal contact (FM)



T1 T2

PP BC TNC 25/75/FM
(Part no. 37 39 82)
• 6 TE
• Up: ≤ 2,5 kV



T1 T2

PP BC TNS 25/100/FM
(Part no. 37 39 52)
• 8 TE
• Up: ≤ 2,5 kV



T1 T2

PP BC TT 25/100/FM
(Part no. 37 39 22)
• 8 TE
• Up: ≤ 2,5 kV

With remote signal contact (FM)



T1 T2 T3

PP BCD TNC 25/75/FM
(Part no. 37 39 92)
• 6 TE
• Up: ≤ 1,0 kV



T1 T2 T3

PP BCD TNS 25/100/FM
(Part no. 37 39 62)
• 8 TE
• Up: ≤ 1,0 kV



T1 T2 T3

PP BCD TT 25/100/FM
(Part no. 37 39 32)
• 8 TE
• Up: ≤ 1,0 kV



T1 T2 T3

PP BCD TNC 25/75/FM
(Part no. 37 39 92)
• 6 TE
• Up: ≤ 1,0 kV



T1 T2 T3

PP BCD TNS 25/100/FM
(Part no. 37 39 62)
• 8 TE
• Up: ≤ 1,0 kV



T1 T2 T3

PP BCD TT 25/100/FM
(Part no. 37 39 32)
• 8 TE
• Up: ≤ 1,0 kV

Sub distribution

TNC



T2

ES 3+0-275-FM
(Part no. 38 14 70)
• pluggable
• 3 TE
• Up at In: ≤ 1,2 kV

TNS



T2

ES 4+0-275-FM
(Part no. 38 14 46)
• pluggable
• 4 TE
• Up at In: ≤ 1,2 kV

TT



T2

ES 3+1-275-FM
(Part no. 38 14 80)
• pluggable
• 4 TE
• Up at In: ≤ 1,2 kV

Not needed for cable length < 10 m



T2

ES 3+0-275-FM
(Part no. 38 14 70)
• pluggable
• 3 TE
• Up at In: ≤ 1,2 kV



T2

ES 4+0-275-FM
(Part no. 38 14 46)
• pluggable
• 4 TE
• Up at In: ≤ 1,2 kV



T2

ES 3+1-275-FM
(Part no. 38 14 80)
• pluggable
• 4 TE
• Up at In: ≤ 1,2 kV

Not needed for cable length < 10 m



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• pluggable
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ES 4+0-275-FM
(Part no. 38 14 46)
• pluggable
• 4 TE
• Up at In: ≤ 1,2 kV



T2

ES 3+1-275-FM
(Part no. 38 14 80)
• pluggable
• 4 TE
• Up at In: ≤ 1,2 kV

Not needed for cable length < 10 m



T2

ES 3+0-275-FM
(Part no. 38 14 70)
• pluggable
• Up at In: ≤ 1,2 kV



T2

ES 4+0-275-FM
(Part no. 38 14 46)
• pluggable
• Up at In: ≤ 1,2 kV



T2

ES 3+1-275-FM
(Part no. 38 14 80)
• pluggable
• Up at In: ≤ 1,2 kV

Terminal Protection

EP-T3/230 KM-10kA
(Part no. 36 20 41)

T3

Surge arrester for installation systems and terminal equipment with optical fault indication (LED).
- Indoor Execution (IP 21)



EP-T3/230 KM-10kA-v
(Part no. 36 20 43)

T3

Surge arrester for installation systems and terminal equipment with optical fault indication (LED).
- Outdoor Execution (IP 65)



EP-T3/230 SDU
(Part no. 36 20 40)

T3

Two-pole surge arrester for the protection of electrical devices, for the retrofitting of 230 V flush-mounted boxes.



CPS-F 230/RJ45/RJ11
(Part no. 32 50 45)

T3

Pluggable combined overvoltage protection for electrical and electronic devices with supply voltage of 230 V. Application for analogue and digital telephone lines, IT and networks.



EP D TN 24V/16A/FM
(Part no. 38 05 51)

T3

Compact 2-pole surge arrester type 3 (class III) for TN systems.
- Rated load current: 16 A
- with remote signal contact (FM)



EP D TN 24V/25A-FM
(Part no. 38 05 55)

T3

Compact 2-pole surge arrester type 3 (class III) for TN systems.
- Rated load current: 25 A
- with remote signal contact (FM)



CT-T3/24V-16A-FM
(Part no. 38 00 13)

T3

Pluggable 2-pole surge arrester type 3 (class III) for TN systems.
- Rated load current: 16 A
- with remote signal contact (FM)





SURGE PROTECTION FOR TELECOMMUNICATION SYSTEMS

Situation

1 behind the entrance into the building / transfer point

2 at the terminal equipment

Analog connection up to two pairs, eg for private connection



IsoProData-Tr (without filter)
(Part no. 27 30 02)

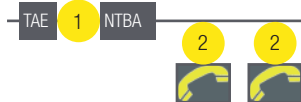
1DA (for two leads)



DataPro-TAE/NFN-aP
(Part no. 24 00 04)



ISDN connection



IsoProData-Tr (without filter)
(Part no. 27 30 02)

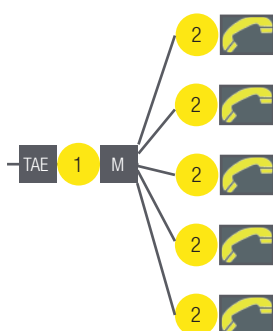
1DA (for two leads)



DP RJ45-48V-Tr
(Part no. 23 90 00)



ISDN multiplex connection



TelPro LSA 2-10-3EH230E-10kA
(Part no. 24 01 19) and

LSA 2/10-Tr
(Part no. 24 01 02) and

LSA 2/10-MW10-25/22
(Part no. 24 01 10)*

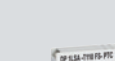
Alternatively a combined protection device

DP 1LSA-T110FS-PTC
(Part no. 24 00 48) and

LSA 2/10-Tr
(Part no. 24 01 02) and

LSA 2/10-ES
(Part no. 24 01 33) and

LSA 2/10-MW10-25/22
(Part no. 24 01 10) *



DP RJ45-48V-Tr
(Part no. 23 90 00)



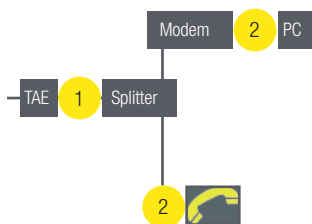
DataPro-TAE/NFN-aP
(Part no. 24 00 04)



Alternativ:
CPS-F 230/RJ45/RJ11
(Part no. 32 50 45)



DSL connection and analog telephone connection



IsoProData-Tr (without filter)
(Part no. 27 30 02)

1DA (for two leads)



DP RJ45 f/f
(Part no. 24 00 11)
Cat. 5



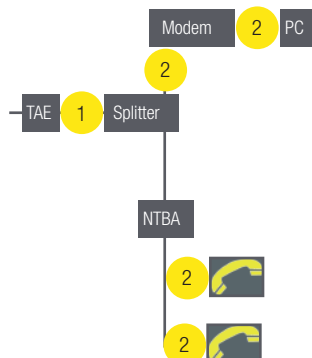
DP-RJ45-CAT6-48V-Tr
(Part no. 24 00 05)
Cat. 6



DataPro-TAE/NFN-aP
(Part no. 24 00 04)



DSL connection and ISDN



IsoProData-Tr (without filter)
(Part no. 27 30 02)

1DA (for two leads)



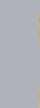
DP RJ45 f/f
(Part no. 24 00 11)
Cat. 5



DP-RJ45-CAT6-48V-Tr
(Part no. 24 00 05)
Cat. 6



DP RJ45-48V-Tr
(Part no. 23 90 00)



*(Customized mounting frame and suitable housing available)

Situation

Installation at the server

Installation at the switch/hub

Installation at the terminal

CAT 5 (6), CLASS D Data line

DP RJ45-f/f
(Part no. 24 00 11)
Cut-off frequency: 100 MHz



DP-RJ45-CAT6-48V-Tr
(Part no. 24 00 05)
Cut-off frequency: 250 MHz



DP-1xRJ45-PoE-ALU
(Part no. 24 00 21)
Cut-off frequency: 100 MHz



Alternativ:
CPS-F 230/RJ45/RJ11
(Part no. 32 50 45)



DP-8xRJ45-6V-WG
(Part no. 19 40 50) oder
DP 8xRJ45-6x6V/2x48V-WG
(Part no. 19 40 51)
Cut-off frequency: 100 MHz



DP 1x8RJ45-19"
(Part no. 19 40 13)



Patchpanel auch mit 8/16/32/40 und 48
Ports verfügbar



Cut-off frequency:
100 MHz

DP RJ45-f/f
(Part no. 24 00 11)
Cut-off frequency: 100 MHz



DP-RJ45-CAT6-48V-Tr
(Part no. 24 00 05)
Cut-off frequency: 250 MHz



DP-1xRJ45-PoE-ALU
(Part no. 24 00 21)
Cut-off frequency: 100 MHz

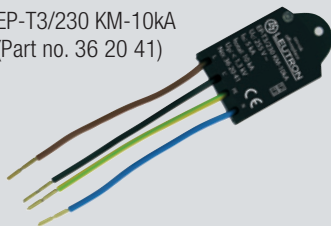


Alternativ:
CPS-F 230/RJ45/RJ11
(Part no. 32 50 45)



230 V-net power supply

EP-T3/230 KM-10kA
(Part no. 36 20 41)



Alternativ:
CPS-F 230/RJ45/RJ11
(Part no. 32 50 45)



Alternativ:
CPS-F 230/RJ45/RJ11
(Part no. 32 50 45)



Summary surge protection - when to install - which device to select - how to install?

When? DIN VDE 0100-443

- Surge protection always during operation of „sensitive“ equipment
- Adaptation to networked installations with sensitive devices - „System protection“
- Increased focus on protection at switching overvoltages
-

Which one? DIN VDE 0100-534

- SPD Type 1 for overhead lines
- SPD Type 2 for all other systems.
- The surge current to be expected at the site of operation should be supported by the protective device.
-

How? DIN VDE 0100-534

- Additional SPDs at a distance > 10 meters to sensitive equipment
- Maintain the energetic coordination between the SPDs and the terminal
- Additional SPDs for data lines and lines leaving the building.



INSTALLATION OF SURGE PROTECTIVE SYSTEMS

IEC 60364-5-53/A2 (IEC 64/1168/CDV: 2001) therefore recommends to design the total cable length of surge protective devices in branch circuits to be not longer than 0.5 m, maximum length is 1 m.

Note: cable length of more than 1 m create unacceptable overvoltage conditions.

In case of V connection the use of pre-fuse has to be checked.

Figures 1 and 2 show the recommended max. cable lengths of surge protective devices in branch circuits.

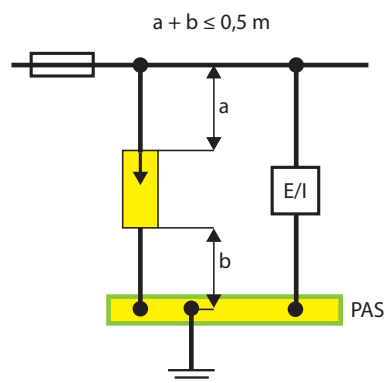


Fig. 1 Parallel wiring

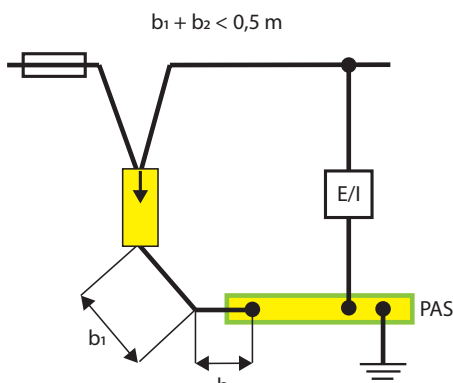


Fig. 2 Serial wiring or V-wiring

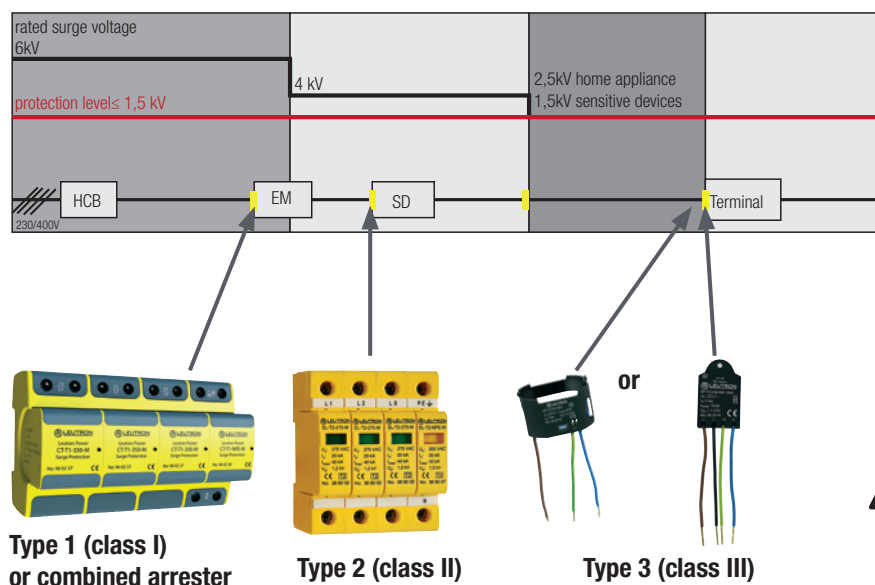
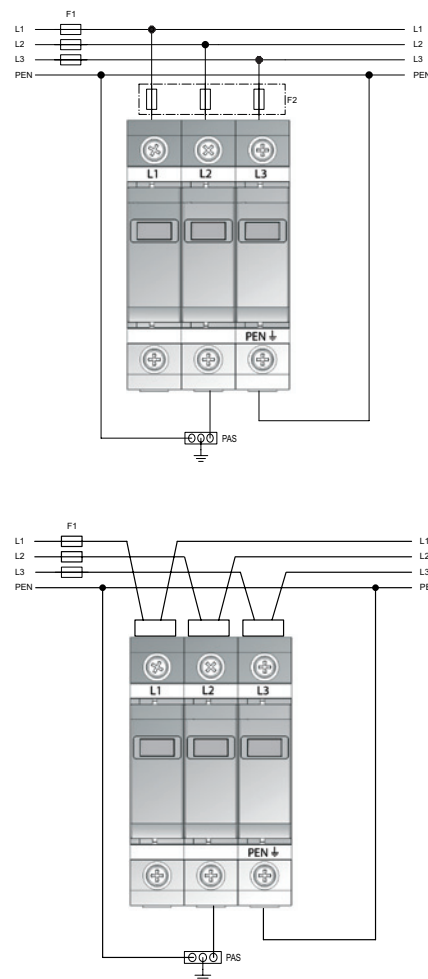
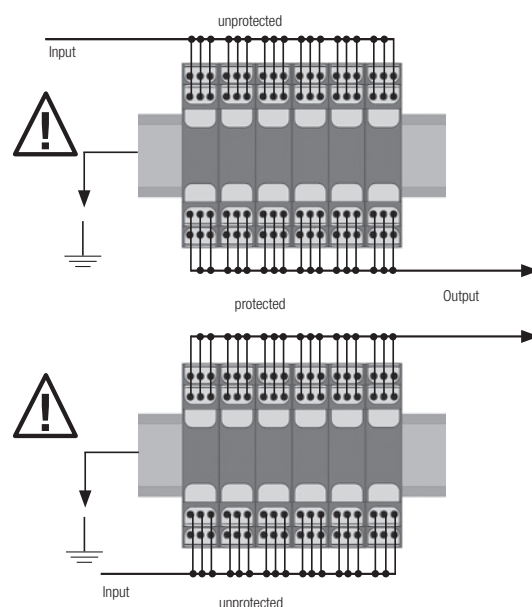


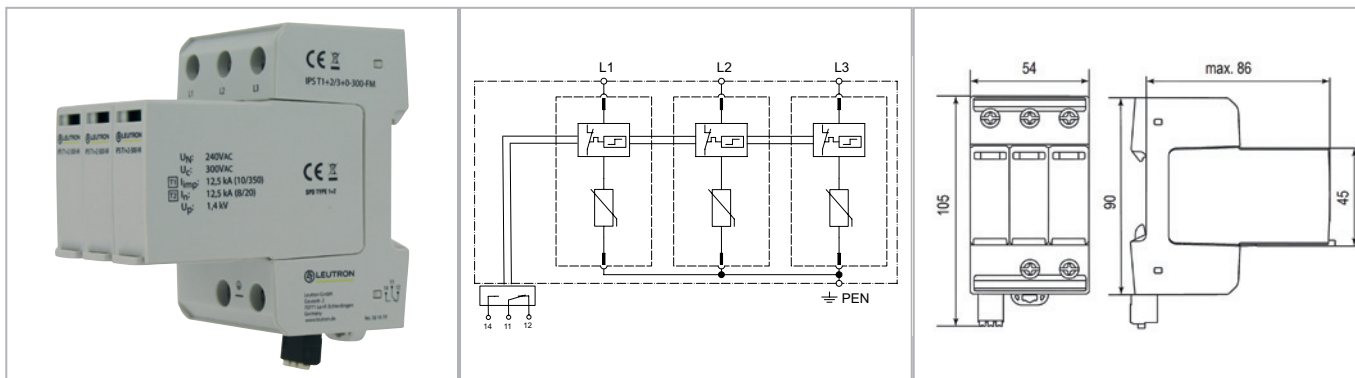
Fig. 3 Protection Level



NEW

Surge protection of power supply

Combined arrester type 1 + 2 for AC power supplies / IsoProS pluggable



Three pole, pluggable combined lightning and surge arrester, for example for 3-phase TN-C systems. Mechanical status indicator: State of the surge protective device is optically indicated.

- Test standard: IEC 61643-11 / EN 61643-11
- Main Substitution
- High lightning impulse discharge current of 12.5 kA (10/350 μ s) per pole
- With remote signalling contact (FM)

Technical Data		IPS T1+2/3+0-300-FM
IEC category		Type 1 + 2
Nominal voltage AC	UN	240 V~
Max. continuous operating voltage AC (50/60Hz)	Uc	300 V~
Nominal discharge current (8/20) L-N/N-PE/L-PEN	In	- / - / 12,5 kA
Max. discharge current (8/20 μ s) L-N/N-PE/L-PEN	Imax	- / - / 50 kA
Lightning impulse current (10/350 μ s) L-N/N-PE/L-PEN	Iimp	- / - / 12,5 kA
Specific Energy	W/R	39 kJ/ Ω
Charge	Q	6,25 As
Protection level	Up	< 1,4 kV
Response time	tA	< 25 ns
Max. allowed fuse or back-up fuse		315 A / 250 A gG
Short-circuit withstand capability at max. back-up fuse	Ik	25 / 50 kAeff
TOV Withstand 5s	UT	337 V
Temporary overvoltage rating 120 min	UT	442 V
Operating temperature range	TU	-40 - + 85 °C
Max. conductor cross section		stranded 35/fine stranded 25 mm ²
Max. connection torque for terminals		4,5 Nm
Enclosure material / colour		Thermoplastic: Extinguishing Degree UL 94 V-0/grey
Degree of protection (IEC EN 60529)		IP 20
Dimension (DIN 43880)		3 TE

Order Data

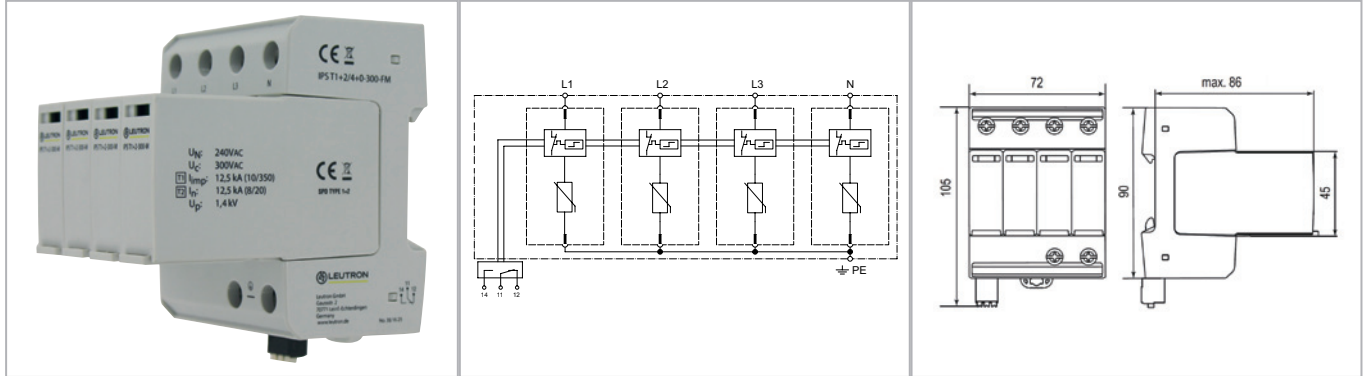
Product	IPS T1+2/3+0-300-FM
Article-No.	38 16 19



NEW

Surge protection of power supply

Combined arrester type 1 + 2 for AC power supplies / IsoProS pluggable



Four pole pluggable combined lightning and surge arrester, for example for 3-phase TN-S systems. Mechanical status indicator: State of the surge protective device is optically indicated.

- Test standard: IEC 61643-11 / EN 61643-11
- High lightning impulse discharge current of 12.5 kA (10/350 μ s) per pole
- With remote signalling contact (FM)
- Main Substitution
- Mounting on 35 mm DIN rail (EN 60715)

Technical Data		IPS T1+2/4+0-300-FM
IEC category		Type 1 + 2
Nominal voltage AC	UN	240 V~
Max. continuous operating voltage AC (50/60Hz)	Uc	300 V~
Nominal discharge current (8/20) L-N/N-PE/L-PEN	In	12,5 / - / - kA
Max. discharge current (8/20 μ s) L-N/N-PE/L-PEN	I _{max}	50 / - / - kA
Lightning impulse current (10/350 μ s) L-N/N-PE/L-PEN	I _{imp}	12,5 / - / - kA
Specific Energy	W/R	39 kJ/ Ω
Charge	Q	6,25 As
Protection level	Up	< 1,4 kV
Response time	tA	< 25 ns
Max. allowed fuse or back-up fuse		315 A / 250 A gG
Short-circuit withstand capability at max. back-up fuse	I _k	25 / 50 kA _{eff}
TOV Withstand 5s	UT	337 V
Temporary overvoltage rating 120 min	UT	442 V
Operating temperature range	TU	-40 - + 85 °C
Max. conductor cross section		stranded 35/fine stranded 25 mm ²
Max. connection torque for terminals		4,5 Nm
Degree of protection (IEC EN 60529)		IP 20
Enclosure material / colour		Thermoplastic: Extinguishing Degree UL 94 V-0/grey
Dimension (DIN 43880)		4 TE

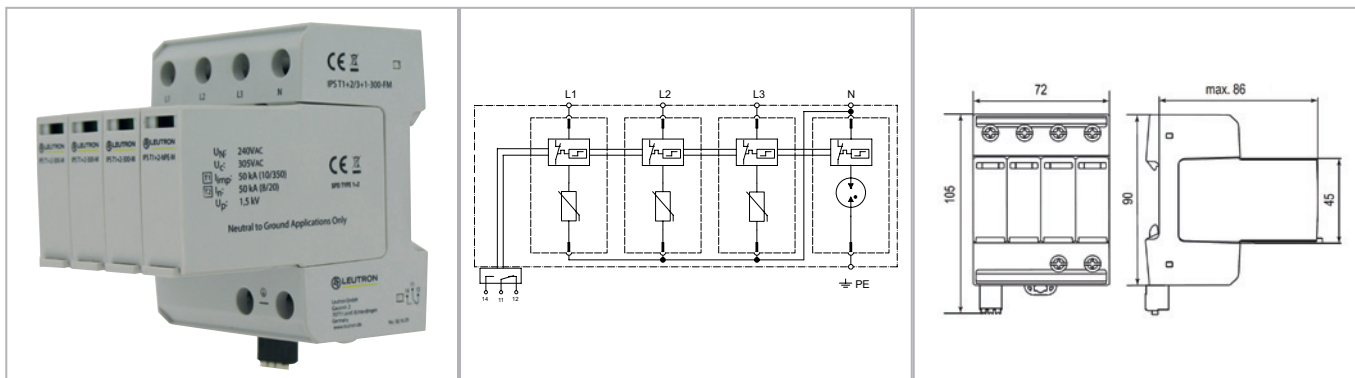
Order Data

Product	IPS T1+2/4+0-300-FM
Article-No.	38 16 25

NEW

Surge protection of power supply

Combined arrester type 1 + 2 for AC power supplies / IsoProS pluggable



Four pole pluggable combined lightning and surge arrester, for example for 3-phase TT and TN-S systems. Mechanical status indicator: State of the surge protective device is optically indicated.

- Class I+II (T1+T2) Combined Arresters
- Test standard: IEC 61643-11 / EN 61643-11
- High lightning impulse discharge current of 12.5 kA (10/350 μ s) per pole
- With remote signalling contact (FM)
- Main Substitution
- Mounting on 35 mm DIN rail (EN 60715)

Technical Data

IPS T1+2/3+1-300-FM

IEC category		Type 1 + 2
Nominal voltage AC	UN	240 V~
Max. continuous operating voltage AC (50/60Hz)	Uc	300 V~
Nominal discharge current (8/20) L-N/N-PE/L-PEN	In	12,5 / 50 / - kA
Max. discharge current (8/20 μ s) L-N/N-PE/L-PEN	Imax	50 / 100 / - kA
Lightning impulse current (10/350 μ s) L-N/N-PE/L-PEN	Iimp	12,5 / 50 / - kA
Specific Energy	W/R	39 (L-N) / 625 (N-PE) kJ/ Ω
Charge	Q	6,25 (L-N) / 25 (N-PE) As
Protection level	Up	$\leq 1,4$ (MOV)/ $\leq 1,5$ (GDT) kV
Follow-on current extinguishing capability AC N-PE	Ifi	100 Aeff
Response time	tA	25 (MOV)/100 (GDT) ns
Max. allowed fuse or back-up fuse		315 A / 250 A gG
Short-circuit withstand capability at max. back-up fuse, 50Hz	Ik	25/50 kA
TOV Withstand 5s	UT	337 V
Temporary overvoltage rating 120 min	UT	442 V
TOV withstand 200ms N-PE	UT	1200 V
Operating temperature range	TU	-40 - +85 °C
Max. conductor cross section		35mm ² stranded/25mm ² flexible
Max. connection torque for terminals		4,5 Nm
Degree of protection (IEC EN 60529)		IP 20

Order Data

Product	IPS T1+2/3+1-300-FM
Article-No.	38 16 29



LEUTRON GMBH

LIGHTNING AND SURGE PROTECTION

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