KIWA®

surge protective devices

APPLICATION HANDBOOK

RECOMMENDATIONS FOR APPLICATIONS OF SPD KIWA

KIWA develops and produces surge protective devices SPD of all standard low voltage categories. All products are manufactured using modern progressive technological procedures with highest degree of quality control which enables to achieve high reliability and security by SPD application. Declared functional and reliability properties have been verified by national certification authorities under the standards effective in country of application.

The offered assortment of SPD KIWA enables design teams to achieve in designed devices required level of surge withstand by low purchasing and operational costs. From the point of view of a long term operation the big advantage is the functional and dimensional compatibility with products manufactured by world-leading suppliers.

Assortment of SPD KIWA is for users an effective means to increase competitiveness of own products on the world market in a broad range of application areas starting with large investment complexes and ending with data lines for instrumentation and networks.

KIWA offers to consumer modern and certified SPD units with a favorable utility value to price ratio. Beside the standard assortment offer, KIWA is ready within a short time develop and supply user-specific SPD units e.g. for networks with nonstandard voltage.

With own high qualified technical capacity KIWA is able to solve unique problems related to preventive protection of electrical equipments and distributions.

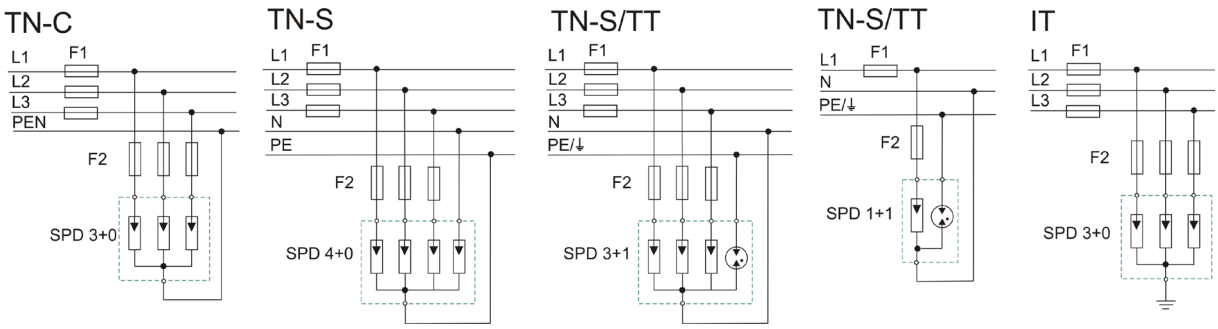
DEVELOPMENT AND PRODUCTION IN SLOVAKIA

. . . our products protect everywhere!

General provisions which deal with the issue of requirement, design and inspection in EU countries are: **IEC 61024-1** which defines realization of outdoor and indoor protection against the lightning, **IEC 62305** containing General principles for building protection against the lightning and Lightning protection risk management.

Lightning protection level - LPL	Maximal lightning current	Overvoltage protection by current splitting 50% earth / 50% installation
LPL I	200 kA	100 kA (e.g. 4 x 25 kA)
LPL II	150 kA	75 kA
LPL III	100 kA	50 kA (e.g. 4 x 12,5 kA)
LPL IV	100 kA	50 kA

Typical connection of overvoltage protection - SPD



RISK OF LIGHTNING STRIKE TO THE OBJECT

LOW THREAT OF INSTALLATION – no threat of direct strike to the object or supply network **LPL IV** **I_{imp}=50 kA**

- family houses without air-termination conductor, network supply by earth cable; situated inside dense build-up area
- objects and halls where no persons are present
- objects inside dense build-up areas with high rise buildings
- individual apartment units in apartment houses where is possibility to install into the main distributor I. stage e.g. POm I LCF 3 75 280V/25kA, then individual apartment units can be protected with II. stage of protection, e.g. PO II 280V/40kA

MIDDLE THREAT OF INSTALLATION **LPL III** **I_{imp}=50 kA**

- apartment houses
- small administration buildings
- family houses without air-termination conductor, with network supply from outer network
- agricultural objects
- individual apartment units in apartment houses, where is not possibility to install I. stage while the lightning current does not exceed 12,5 kA (10/350µs), then individual apartment units can be protected with I. stage of protection e.g. PO I 1 280V/12,5kA

HIGH THREAT OF INSTALLATION **LPL I** **I_{imp}=100 kA** **LPL II** **I_{imp}=75 kA**

- family houses (objects) with air-termination conductor, does not matter which kind of network connection
- individual apartment units in apartment houses, where is not possibility to install I. stage and the lightning current can exceed 12,5 kA (10/350µs), then individual apartment units can be protected with I. stage of protection e.g. POm I LCF 25 280V/25kA
- hospitals
- public buildings
- objects close to high and very high voltage lines
- objects with metallic roof or frame
- schools
- supermarkets
- administration buildings
- objects with earthed antenna or air condition

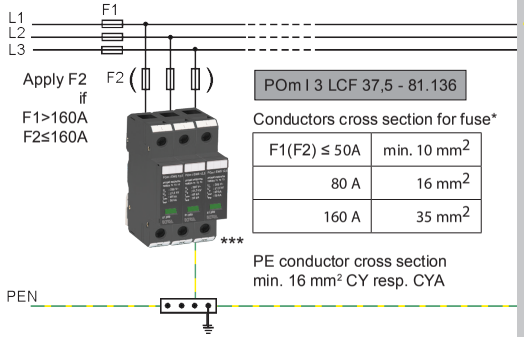
INDUSTRIAL AND SPECIAL APPLICATIONS **LPL I** **I_{imp}=100 kA**

- buildings with explosive environment
- chemical productions
- high importance buildings
- mobile operator stations, BTS, CTS – computer and informatics technologies
- water works
- power plants
- flight control buildings, large industrial objects

OBJECTS WITH LIGHTNING PROTECTION LEVEL LPL III and LPL IV

TN-C

MAIN DISTRIBUTOR
T1+T2+(T3) to 5 m



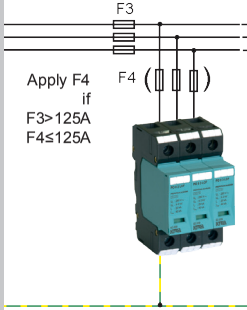
POm I 3 LCF 37,5 - 81.136

Conductors cross section for fuse*

F1(F2) ≤ 50A	min. 10 mm²
80 A	16 mm²
160 A	35 mm²

PE conductor cross section
min. 16 mm² CY resp. CYA

SUB DISTRIBUTOR
T2+(T3) to 5 m



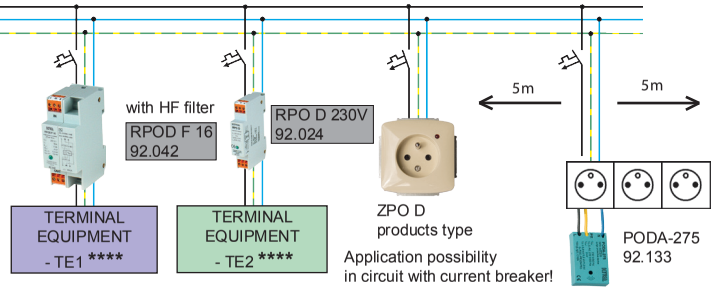
PO II 3 280V/40kA 82.003

Conductors cross section for fuse

F3(F4) <50 A	min. 6 mm²
63 A	16 mm²
100 A	25 mm²

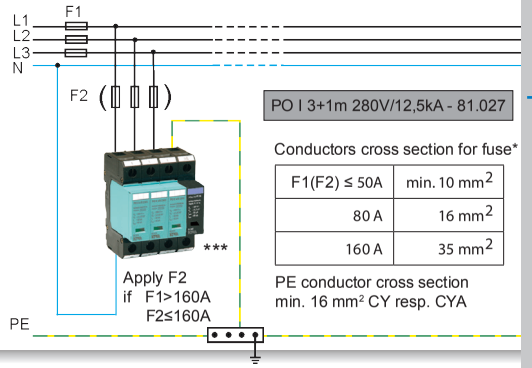
PE conductor cross section
min. 10 mm² CY resp. CYA

TERMINAL EQUIPMENT
T3



TN-S

MAIN DISTRIBUTOR
T1+T2+(T3) to 5 m



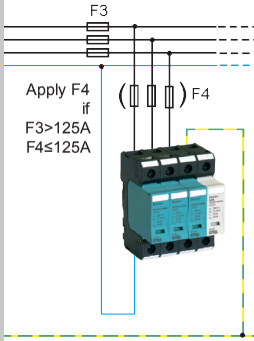
PO I 3+1m 280V/12,5kA - 81.027

Conductors cross section for fuse*

F1(F2) ≤ 50A	min. 10 mm²
80 A	16 mm²
160 A	35 mm²

PE conductor cross section
min. 16 mm² CY resp. CYA

SUB DISTRIBUTOR
T2+(T3) to 5 m



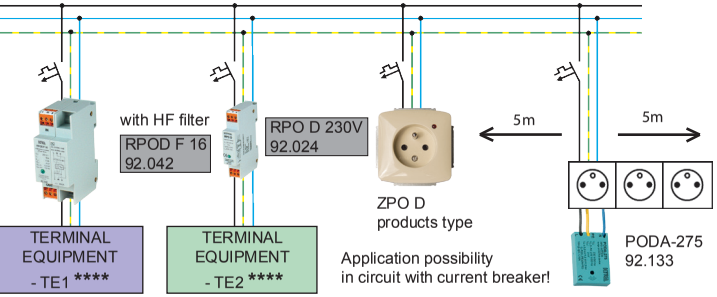
PO II 3+1 280V/40kA 82.018

Conductors cross section for fuse

F3(F4) <50 A	min. 6 mm²
63 A	16 mm²
100 A	25 mm²

PE conductor cross section
min. 10 mm² CY resp. CYA

TERMINAL EQUIPMENT
T3



	TYPE	Order №	TN-C	TN-S
1	POm I 3 LCF 37,5 280V/12,5kA	81.136		
2	POm I 3 R LCF 37,5 280V/12,5kA	81.137		
3	POm I 3+1 LCF 50 280V/12,5kA	81.140		
4	POm I 3+1 R LCF 50 280V/12,5kA	81.141		
5	POm I 4 LCF 50 280V/12,5kA	81.138		
6	POm I 4 R LCF 50 280V/12,5kA	81.139		
7	PO I 3 280V/12,5kA	81.003		
8	PO I 3 R 280V/12,5kA	81.007		
9	PO I 3 EWS 280V/12,5kA	81.013		
10	PO I 3 R EWS 280V/12,5kA	81.015		
11	PO I 3+1m 280V/12,5kA	81.027		
12	PO I 3+1m R 280V/12,5kA	81.028		
13	PO I 3+1m EWS 280V/12,5kA	81.029		
14	PO I 3+1m R EWS 280V/12,5kA	81.030		
15	PO I 4 280V/12,5kA	81.004		
16	PO I 4 R 280V/12,5kA	81.008		
17	PO I 4 EWS 280V/12,5kA	81.014		
18	PO I 4 R EWS 280V/12,5kA	81.016		

	TYPE	Order №	TN-C	TN-S
1	PO II 3 280V/40kA	82.003		
2	PO II 3 R 280V/40kA	82.007		
3	PO II 3 LCF 280V/40kA	82.009		
4	PO II 3 R LCF 280V/40kA	82.011		
5	PO II 3 EWS 280 V/40 kA	82.013		
6	PO II 3 R EWS 280V/40kA	82.015		
7	PO II 3+1 280V/40kA	82.018		
8	PO II 3+1 R 280V/40kA	82.020		
9	PO II 4 280V/40kA	82.004		
10	PO II 4 R 280V/40kA	82.008		
11	PO II 4 LCF 280V/40kA	82.010		
12	PO II 4 R LCF 280V/40kA	82.012		
13	PO II 4 EWS 280V/40kA	82.014		
14	PO II 4 R EWS 280V/40kA	82.016		

basic version

version with remote signaling - R

possibility of application in front of electricity meter** as well as after current breaker

* Valid only in V - connection of SPD
(T - connection as specified
by EN 33 2000-5-534)

** Valid only with the agreement an electricity supplier

*** SPD image is illustrative

LCF - leakage current free

EWS - wear indicator SPD

R - remote signaling contact SPD

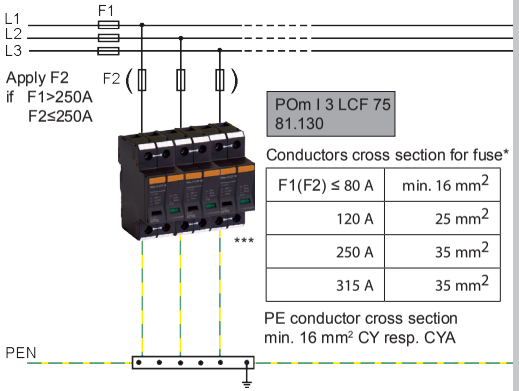
	TYP	Order №	Current	****
1	RPO D 230V	92.024	16 A	TE2
2	RPO DS 230V	92.025	16 A	TE2
3	RPOD F 16	92.042	16 A	TE1
4	RPOD R F 16	92.043	16 A	TE1
5	RPOD F 6	92.136	6 A	TE1
6	RPOD R F 6	92.137	6 A	TE1
7	RPOD F 16-L	92.142	16 A	TE1
8	RPOD R F 16-L	92.143	16 A	TE1
9	RPOD F 6-L	92.144	6 A	TE1
10	RPOD R F 6-L	92.145	6 A	TE1

R/S - remote signaling contact SPD
F - with HF filter
L - without overvoltage protection on output

OBJECTS WITH LIGHTNING PROTECTION LEVEL LPL I a LPL II

TN-C

MAIN DISTRIBUTOR
T1+T2+(T3) to 5 m



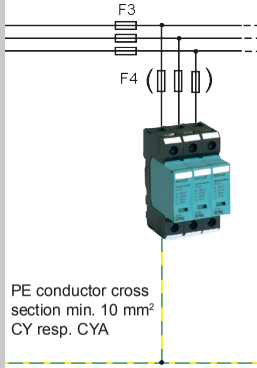
POm I 3 LCF 75
81.130

Conductors cross section for fuse*

F1(F2) ≤ 80 A	min. 16 mm²
120 A	25 mm²
250 A	35 mm²
315 A	35 mm²

PE conductor cross section
min. 16 mm² CY resp. CYA

SUB DISTRIBUTOR
T2+(T3) to 5 m



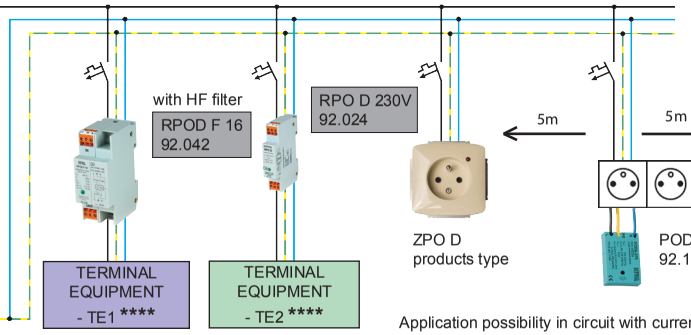
PO II 3 280V/40kA
82.003

Conductors cross section
for fuse

F3(F4) <50 A	min. 6 mm²
63 A	16 mm²
100 A	25 mm²

PE conductor cross
section min. 10 mm²
CY resp. CYA

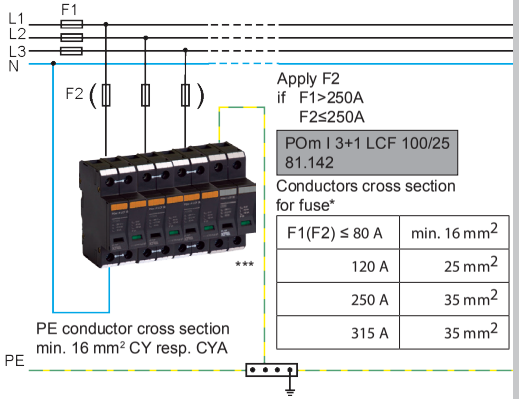
TERMINAL EQUIPMENT
T3



Application possibility in circuit with current breaker!

TN-S

MAIN DISTRIBUTOR
T1+T2+(T3) to 5 m



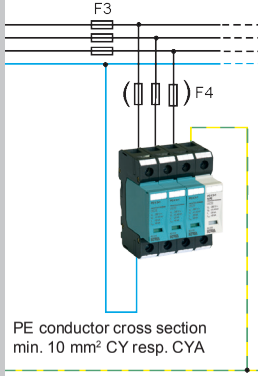
POm I 3+1 LCF 100/25
81.142

Conductors cross section
for fuse*

F1(F2) ≤ 80 A	min. 16 mm²
120 A	25 mm²
250 A	35 mm²
315 A	35 mm²

PE conductor cross section
min. 16 mm² CY resp. CYA

SUB DISTRIBUTOR
T2+(T3) to 5 m



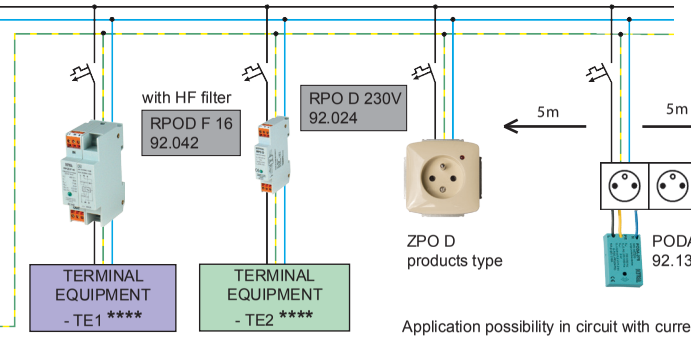
PO II 3+1 280V/40kA
82.018

Conductors cross section
for fuse

F3(F4) <50 A	min. 6 mm²
63 A	16 mm²
100 A	25 mm²

PE conductor cross section
min. 10 mm² CY resp. CYA

TERMINAL EQUIPMENT
T3



Application possibility in circuit with current breaker!

	TYPE	Order №	TN-C	TN-S
1	POm I 3 LCF 90 280V/30kA	81.132		
2	POm I 3 R LCF 90 280V/30kA	81.133		
3	POm I 3+1 LCF 100/30 280V/30kA	81.152		
4	POm I 3+1 R LCF 100/30 280V/30kA	81.153		
5	POm I 4 LCF 120 280V/30kA	81.134		
6	POm I 4 R LCF 120 280V/30kA	81.135		
7	POm I 3 LCF 75 280V/25kA	81.130		
8	POm I 3 R LCF 75 280V/25kA	81.131		
9	POm I 3+1 LCF 100/25 280V/25kA	81.142		
10	POm I 3+1 R LCF 100/25 280V/25kA	81.143		
11	POm I 4 LCF 100 280V/25kA	81.128		
12	POm I 4 R LCF 100 280V/25kA	81.129		

	TYPE	Order №	TN-C	TN-S
1	PO II 3 280V/40kA	82.003		
2	PO II 3 R 280V/40kA	82.007		
3	PO II 3 LCF 280V/40kA	82.009		
4	PO II 3 R LCF 280V/40kA	82.011		
5	PO II 3 EWS 280 V/40 kA	82.013		
6	PO II 3 R EWS 280V/40kA	82.015		
7	PO II 3+1 280V/40kA	82.018		
8	PO II 3+1 R 280V/40kA	82.020		
9	PO II 4 280V/40kA	82.004		
10	PO II 4 R 280V/40kA	82.008		
11	PO II 4 LCF 280V/40kA	82.010		
12	PO II 4 R LCF 280V/40kA	82.012		
13	PO II 4 EWS 280V/40kA	82.014		
14	PO II 4 R EWS 280V/40kA	82.016		

basic version

version with remote signaling - R

possibility of application in front of electricity meter**

* Valid only in V - connection of SPD (T - connection as specified by EN 33 2000-5-534)

** Valid only with the agreement an electricity supplier

*** SPD image is illustrative

LCF - leakage current free

EWS - wear indicator SPD

R - remote signaling contact SPD

	TYPE	Order №	Current	****
1	RPO D 230V	92.024	16 A	TE2
2	RPO DS 230V	92.025	16 A	TE2
3	RPOD F 16	92.042	16 A	TE1
4	RPOD R F 16	92.043	16 A	TE1
5	RPOD F 6	92.136	6 A	TE1
6	RPOD R F 6	92.137	6 A	TE1
7	RPOD F 16-L	92.142	16 A	TE1
8	RPOD R F 16-L	92.143	16 A	TE1
9	RPOD F 6-L	92.144	6 A	TE1
10	RPOD R F 6-L	92.145	6 A	TE1

R/S - remote signaling contact
F - with HF filter
L - without overvoltage protection on output

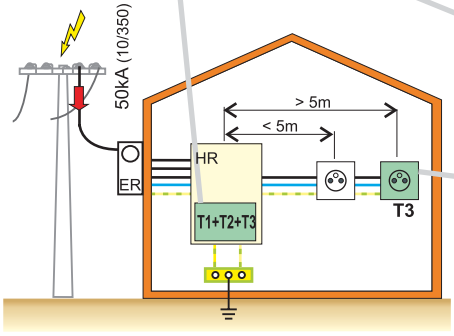
Application of SPD KIWA in electro installations

TN-C, TN-C-S
PO I 3 280V/12,5kA
POm I 3 LCF 37,5 280V/25kA
POm I 3 LCF 75 280V/25kA
POm I 3 LCF 90 280V/30kA
TN-S
PO I 3+1m 280V/12,5kA
PO I 4 280V/12,5kA
POm I 3+1 LCF 50 280V/12,5kA
POm I 4 LCF 50 280V/12,5kA
POm I 3+1 LCF 100/25 280V/25kA
POm I 4 LCF 100 280V/25kA
POm I 3+1 LCF 100/30 280V/30kA
POm I 4 LCF 120 280V/30kA

POm I 3 LCF 75 280V/25kA

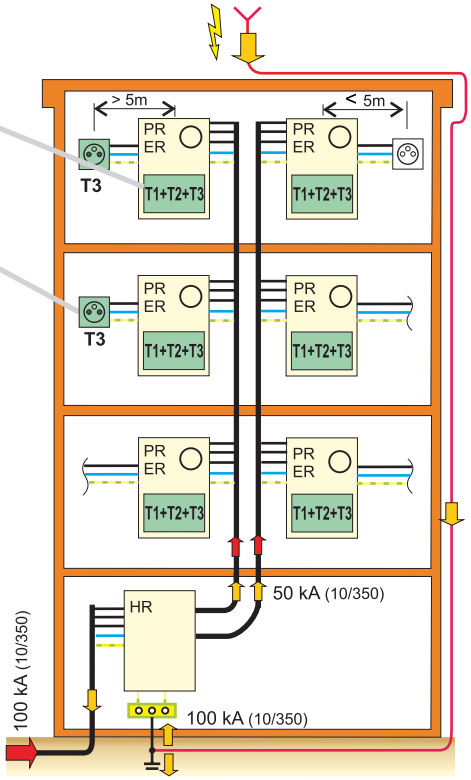
POm I 3 LCF 90 280V/30kA

POI 3+1m 280V/12,5kA



LPL III, IV I_{imp} = 50 kA (10/350)
Building without air-terminal with electrical connection to the outer line.

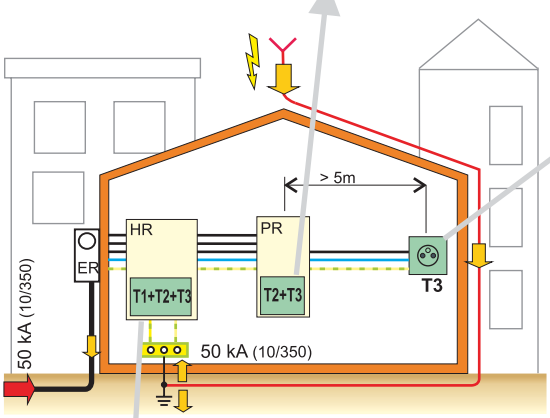
ZPO D



LPL I I_{imp} = 100 kA (10/350)
Apartment units in apartment houses, offices and business premises in administration buildings without possibility of T1 installation in main distributor.

POII 3+1 280V/40kA

TN-C, TN-C-S
POII 3 280V/40kA
POII 1 280V/40kA
TN-S
POII 3+1 280V/40kA
POII 4 280V/40kA
POII 1+1 280V/40kA
POII 2 280V/40kA



ZPO D

LPL III, IV I_{imp} = 50 kA (10/350)
Building with air-terminal situated inside high dense build-up area.

TN-C, TN-C-S
PO I 3 280V/12,5kA
POm I 3 LCF 37,5 280V/25kA
POm I 3 LCF 75 280V/25kA
POm I 3 LCF 90 280V/30kA
TN-S
PO I 3+1m 280V/12,5kA
PO I 4 280V/12,5kA
POm I 3+1 LCF 50 280V/12,5kA
POm I 4 LCF 50 280V/12,5kA
POm I 3+1 LCF 100/25 280V/25kA
POm I 4 LCF 100 280V/25kA
POm I 3+1 LCF 100/30 280V/30kA
POm I 4 LCF 120 280V/30kA

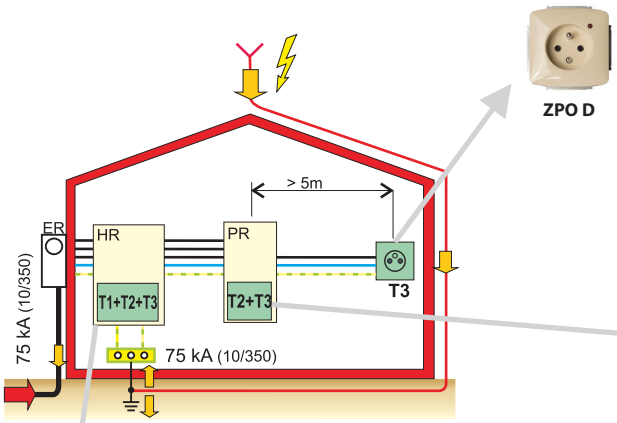
POm I 3 LCF 75 280V/25kA

POm I 3 LCF 90 280V/30kA

POI 3+1m 280V/12,5kA

threat middle

Application of SPD KIWA in electro installations



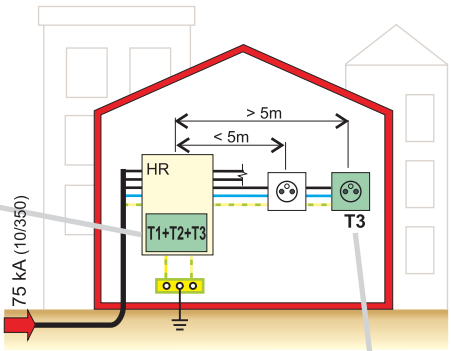

POII 3+1 280V/40kA

TN-C, TN-C-S
POII 3 280V/40kA
POII 1 280V/40kA
TN-S
POII 3+1 280V/40kA
POII 4 280V/40kA
POII 1+1 280V/40kA
POII 2 280V/40kA

LPL II I_{imp} = **75 kA** (10/350)
Individual buildings with antennas, air-terminal. solar modules etc.


POm I 3 LCF 75 280V/25kA

TN-C, TN-C-S
POm I 3 LCF 75 280V/25kA
POm I 3 LCF 90 280V/30kA
TN-S
Pom I 3+1 LCF 100/25 280V/25kA
Pom I 4 LCF 100 280V/25kA
Pom I 3+1 LCF 100/30 280V/30kA
Pom I 4 LCF 120 280V/30kA



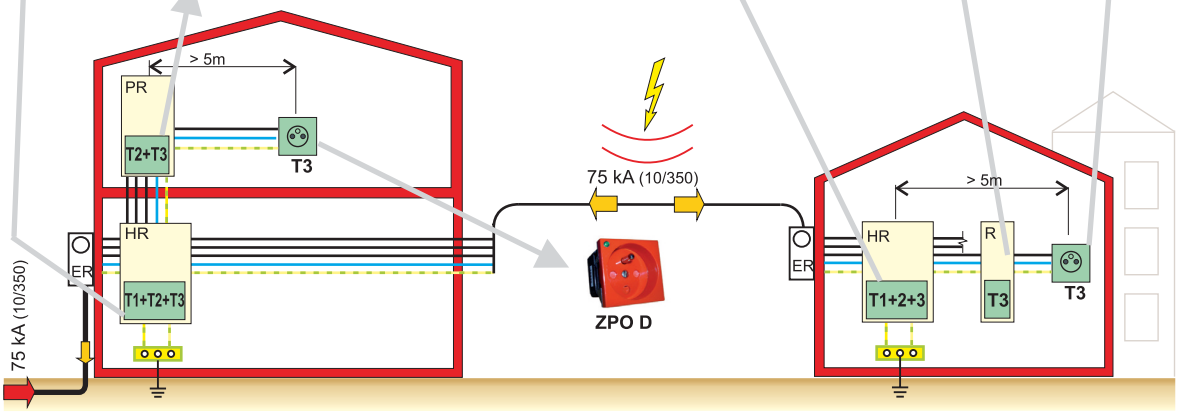
LPL II I_{imp} = **75 kA** (10/350)
Buildings with or without air-terminal, where with respect to the function of protected object a lighting protection level LPL II is required.


POII 3+1 280V/40kA

TN-C, TN-C-S
POII 3 280V/40kA
POII 1 280V/40kA
TN-S
POII 3+1 280V/40kA
POII 4 280V/40kA
POII 1+1 280V/40kA
POII 2 280V/40kA


RPO D


ZPO D



LPL II I_{imp} = **75 kA** (10/350)
Group of buildings without air-terminal interconnected by overhead supply line.

threat high

Application of SPD KIWA in electro installations

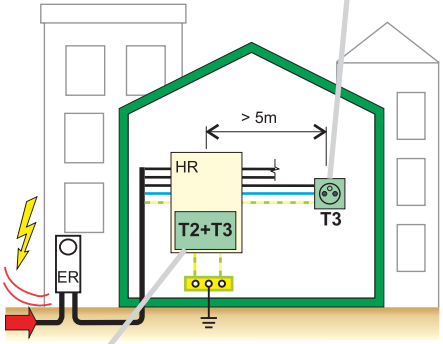
TN-C, TN-C-S
POII 1 280V/40kA
TN-S
POII 1+1 280V/40kA POII 2 280V/40kA

TN-C, TN-C-S
POII 3 280V/40kA
TN-S
POII 3+1 280V/40kA POII 4 280V/40kA

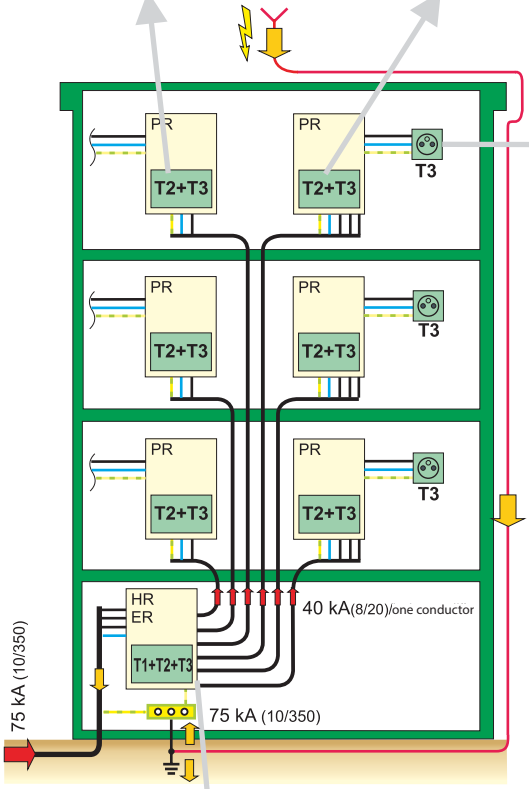
POII 1+1 280V/40kA

POII 3+1 280V/40kA

ZPO D



I_{max} = 40 kA (8/20)/one conductor
Building without air-terminal situated inside dense build-up area without galvanic interconnection with neighboring objects by an underground cable connection.

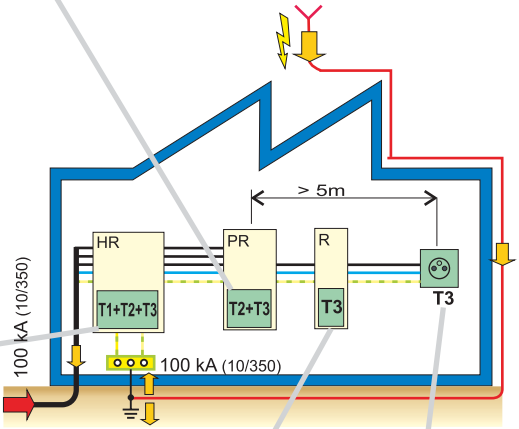


ZPO D

POII 3+1 280V/40kA

TN-C, TN-C-S
POII 3 280V/40kA POII 1 280V/40kA
TN-S
POII 3+1 280V/40kA POII 4 280V/40kA POII 1+1 280V/40kA POII 2 280V/40kA

LPL II I_{imp} = 75 kA (10/350)
Apartment units in apartment houses, offices in administrative buildings with possibility to install T1 in main distributor.



LPL I I_{imp} = 100 kA (10/350)
Objects where a lightning protection level LPL I is requested.

POm I 3 LCF 75 280V/25kA

POm I 3 LCF 90 280V/30kA

RPO D

ZPO D

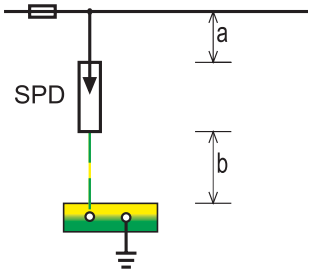
LEGENDA

ER - electricity meter
HR - main distributor
PR - sub distributor
R - distributor

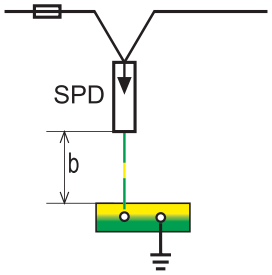
TN-C, TN-C-S
POm I 3 LCF 75 280V/25kA POm I 3 LCF 90 280V/30kA
TN-S
Pom I 3+1 LCF 100/25 280V/25kA Pom I 4 LCF 100 280V/25kA Pom I 3+1 LCF 100/30 280V/30kA Pom I 4 LCF 120 280V/30kA

Principles of SPD installations in distributors

The SPD must be installed into the electrometer box or into other distributor box so that the area around connecting clamps can not be accesses by un authorized persons. The SPD installation can be realized by trained authorized person.
SPD shall be connected to conductors (L1, L2, L3) or (N) by short cables which total lengths shall not exceed 0,5 m .

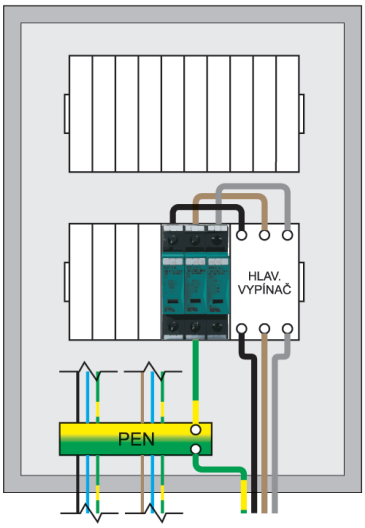


$a + b \leq 0{,}5$ m

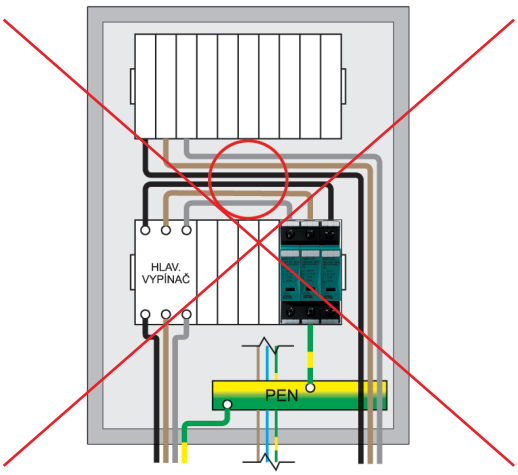


$b \leq 0{,}5$ m

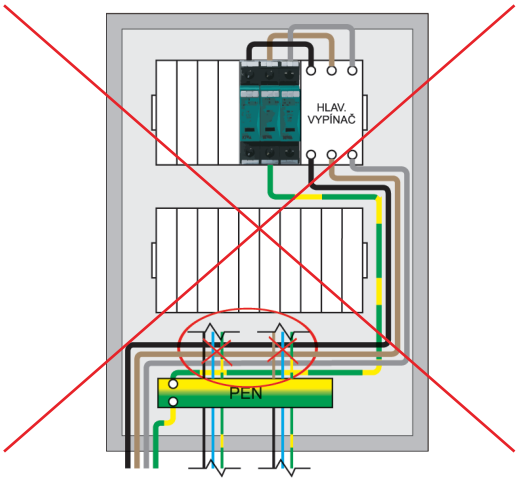
Important are also principles of conductors arrangement:
- there must be prevented:
  - parallel wiring of not protected conductors (e.g. cables to motors) to protected conductors (e.g. supply lines),
  - crossing of not protected with protected cord,
  - induction loops of conductors,
- the earth clamp of SPD must be always connected with earth clamp of appliance.



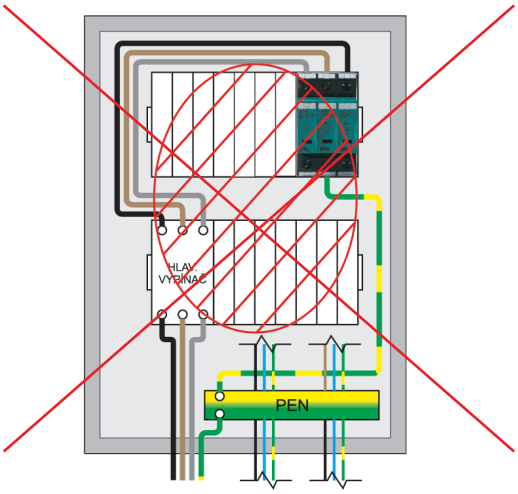
Correct



Wrong

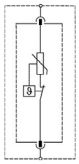


Wrong

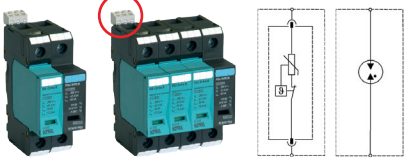


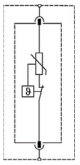
Wrong

1st level - with replaceable plug-in's T1+T2+T3 (B+C+D) I_{imp} = 12,5 kA



R .. remote signaling contact for the identification of the overvoltage protection state





EWS version
Signaling states of wear:
- OK
- replacement is recommended
- out of operation, to be replaced immediately

EWS .. signal of wear state

R .. remote signaling contact

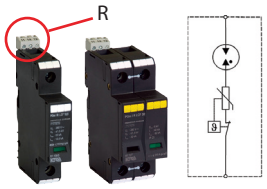
SPD without contact	Order №	SPD with contact - R	Order №
PO I 1 280V/12,5kA	81.001	PO I 1 R 280V/12,5kA	81.005
PO I 2 280V/12,5kA	81.002	PO I 2 R 280V/12,5kA	81.006
PO I 3 280V/12,5kA	81.003	PO I 3 R 280V/12,5kA	81.007
PO I 4 280V/12,5kA	81.004	PO I 4 R 280V/12,5kA	81.008
PO I 0 280V/12,5kA (spare plug-in protective unit)			81.017

TN-S

SPD without contact	Order №	SPD with contact - R	Order №
PO I 1+1m 280V/12,5kA	81.031	PO I 1+1m R 280V/12,5kA	81.032
PO I 3+1m 280V/12,5kA	81.027	PO I 3+1m R 280V/12,5kA	81.028
PO I 0 280V/12,5kA (spare plug-in protective unit)			81.017

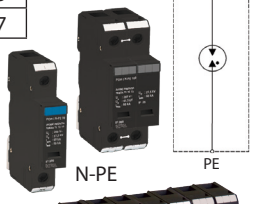
SPD without contact	Order №	SPD with contact - R	Order №
PO I 1 EWS 280V/12,5kA	81.023	PO I 1 R EWS 280V/12,5kA	81.025
PO I 2 EWS 280V/12,5kA	81.024	PO I 2 R EWS 280V/12,5kA	81.026
PO I 3 EWS 280V/12,5kA	81.013	PO I 3 R EWS 280V/12,5kA	81.015
PO I 4 EWS 280V/12,5kA	81.014	PO I 4 R EWS 280V/12,5kA	81.016
PO I 0 EWS 280V/12,5kA (spare plug-in protective unit EWS)			81.020

1st level - monoblock T1+T2+T3 (B+C+D) I_{imp} = 12,5 kA , I_{imp} = 25 kA, I_{imp} = 30 kA



SPD without contact	Order №	SPD with contact - R	Order №
POm I LCF 12,5 280V/12,5kA	81.104	POm I R LCF 12,5 280V/12,5kA	81.107
POm I LCF 25 280V/25kA	81.124	POm I R LCF 25 280V/25kA	81.125
POm I LCF 30 280V/30kA	81.126	POm I R LCF 30 280V/30kA	81.127

SPD with spark gap N-PE	Order №
POm I N-PE 50 260V/50kA	81.101
POm I N-PE 100 260V/100kA	81.121



SPDs completed from individual poles:

NOTE:
Busbar QB 18-4, completed from 3 peaces of monoblock POm I LCF 12,5 and 1 peace of POm I N-PE 50

Busbars	Order №	Busbars	Order №	Busbars	Order №
QB 18-2 (2 - pol)	91.601	QB 18-4 (4 - pol)	91.605	QB 18-8 (8 - pol)	91.609
QB 18-3 (3 - pol)	91.603	QB 18-6 (6 - pol)	91.610		

SPDs from monoblock integrated into 1 SPDs:

Completed from POm I LCF 12,5 280V/12,5kA			
SPD without contact	Order №	SPD with contact - R	Order №
POm I 3 LCF 37,5 280V/12,5kA	81.136	POm I 3 R LCF 37,5 280V/12,5kA	81.137
POm I 4 LCF 50 280V/12,5kA	81.138	POm I 4 R LCF 50 280V/12,5kA	81.139
POm I 3+1 LCF 50 280V/12,5kA	81.140	POm I 3+1 R LCF 50 280V/12,5kA	81.141

Completed from POm I LCF 25 280V/25kA			
SPD without contact	Order №	SPD with contact - R	Order №
POm I 3 LCF 75 280V/25kA	81.130	POm I 3 R LCF 75 280V/25kA	81.131
POm I 4 LCF 100 280V/25kA	81.128	POm I 4 R LCF 100 280V/25kA	81.129
POm I 1+1 LCF 50/25 280V/25kA	81.150	POm I 1+1 R LCF 50/25 280V/25kA	81.151
POm I 3+1 LCF 100/25 280V/25kA	81.142	POm I 3+1 R LCF 100/25 280V/25kA	81.143

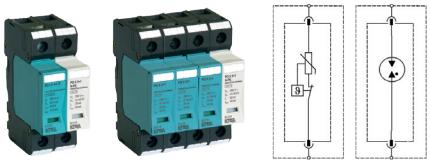
Completed from POm I LCF 30 280V/30kA			
SPD without contact	Order №	SPD with contact - R	Order №
POm I 3 LCF 90 280V/30kA	81.132	POm I 3 R LCF 90 280V/30kA	81.133
POm I 4 LCF 120 280V/30kA	81.134	POm I 4 R LCF 120 280V/30kA	81.135
POm I 1+1 LCF 50/30 280V/30kA	81.144	POm I 1+1 R LCF 50/30 280V/30kA	81.145
POm I 3+1 LCF 100/30 280V/30kA	81.152	POm I 3+1 R LCF 100/30 280V/30kA	81.153

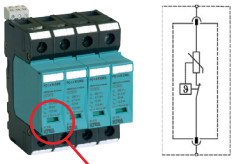
PRODUCT SPECIFICATION

PO m I 3 R LCF 90 280V/30kA

- PO - type SPD
- m - non-replaceable unit = **m**onoblock
- I - class I.
- 3 - number of poles
- R - remote signaling
- LCF - version with zero residual current and zero follow current
- 90 - common current I_{imp}
- 280V/30kA - U_c/I_{imp} = max. operating voltage /impulse current

2nd level - with replaceable plug-in's T2+T3 (C+D)





EWS version
Signaling states of wear:
- OK
- replacement is recommended
- out of operation, to be replaced immediately

LCF .. version with zero residual current and zero follow current

For SPD's with other voltages please ask technical support dpt. on www.kiwa.sk

SPD without contact	Order №	SPD with contact - R	Order №
PO II 1 280V/40kA	82.001	PO II 1 R 280V/40kA	82.005
PO II 2 280V/40kA	82.002	PO II 2 R 280V/40kA	82.006
PO II 3 280V/40kA	82.003	PO II 3 R 280V/40kA	82.007
PO II 4 280V/40kA	82.004	PO II 4 R 280V/40kA	82.008
PO II 0 280V/40kA (spare plug-in protective unit)			82.053

TN-S

SPD without contact	Order №	SPD with contact - R	Order №
PO II 1+1 280V/40kA	82.017	PO II 1+1 R 280V/40kA	82.019
PO II 3+1 280V/40kA	82.018	PO II 3+1 R 280V/40kA	82.020
PO II 0 280V/40kA (spare plug-in protective unit)			82.053
PO II 0 N-PE 260V/40kA (spare plug-in protective unit)			82.060

SPD without contact	Order №	SPD with contact - R	Order №
PO II 1 EWS 280V/40kA	82.068	PO II 1 R EWS 280V/40kA	82.070
PO II 2 EWS 280V/40kA	82.069	PO II 2 R EWS 280V/40kA	82.071
PO II 3 EWS 280V/40kA	82.013	PO II 3 R EWS 280V/40kA	82.015
PO II 4 EWS 280V/40kA	82.014	PO II 4 R EWS 280V/40kA	82.016
PO II 0 EWS 280V/40kA (spare plug-in protective unit EWS)			82.055

SPD without contact	Order №	SPD with contact - R	Order №
PO II 1 LCF 280V/40kA	82.064	PO II 1 R LCF 280V/40kA	82.066
PO II 2 LCF 280V/40kA	82.065	PO II 2 R LCF 280V/40kA	82.067
PO II 3 LCF 280V/40kA	82.009	PO II 3 R LCF 280V/40kA	82.011
PO II 4 LCF 280V/40kA	82.010	PO II 4 R LCF 280V/40kA	82.012
PO II 0 LCF 280V/40kA (spare plug-in protective unit LCF)			82.054

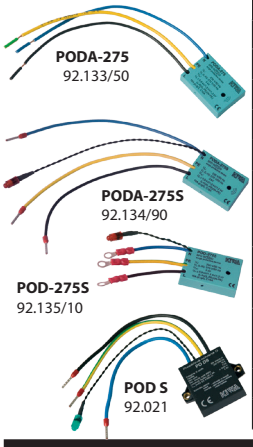
3rd level T3 (D)

Compact module

SPD without contact	Order №	SPD with contact - S	Order №
RPO D 230V/16A	92.024	RPO DS 230V/16A	92.025
RPO D 24V/16A	92.082	RPO DS 24V/16A	92.085

Compact module with HF filter (F) *Width only 2 units*

SPD without contact	Order №	SPD with contact - R	Order №
RPOD F 6 230V/6A	92.136	RPOD R F 6 230V/6A	92.137
RPOD F 16 230V/16A	92.042	RPOD R F 16 230V/16A	92.043



SPD modules for sockets

	Order №	
PODA-275 *acoustic signaling*	92.133/10	wire end ferrule, lenght of wire 50 mm
	92.133/20	cable lug, lenght of wire 60 mm
	92.133/30	wire end ferrule, lenght of wire on order
	92.133/40	cable lug, lenght of wire on order
	92.133/50	wire end ferrule and cable lug pack in, lenght of wire 160 mm
	92.133/90	wire end ferrule, lenght of wire 160 mm
PODA-275S *acoustic and optic red signaling*	92.134/10	ending and lenght of wireon order
	92.134/90	wire end ferrule, lenght of wire 160 mm
POD-275S (S-*optic*) *optic red signaling*	92.135/10	wire end ferrule, lenght of wire 50 mm
	92.135/20	cable lug, lenght of wire 60 mm
	92.135/90	wire end ferrule, lenght of wire 160 mm
PO DS *optic green signaling*	92.021	wire end ferrule, lenght of wire 150 mm

Surge protective sockets

TANGO D1	Order №	TANGO D2	Order №	CLASSIC D1	Order №	CLASSIC D2	Order №
ZPO D ATA1 iS-4kV/bie	92.069	ZPO D ATA2 iS-4kV/bie	92.070	ZPO D ACL1 iS-4kV/bie	92.071	ZPO D ACL2 iS-4kV/bie	92.072
ZPO D ATA1 iS-4kV/bor	92.098	ZPO D ATA2 iS-4kV/bor	92.116	ZPO D ACL1 iS-4kV/béž	92.090	ZPO D ACL2 iS-4kV/hne	92.095
ZPO D ATA1 iS-4kV/šed	92.106	ZPO D ATA2 iS-4kV/slo	92.111	ZPO D ACL1 iS-4kV/hne	92.105	VALENA D1	Order №
ZPO D ATA1 iS-4kV/čie	92.109	ZPO D ATA2 iS-4kV/čie	92.108			ZPO D LVA1 iS-4kV/bie	92.077
ZPO D ATA1 iS-4kV/béž	92.110	ZPO D ATA2 iS-4kV/béž	92.107			ZPO D LVA1 iS-4kV/béž	92.078

TA

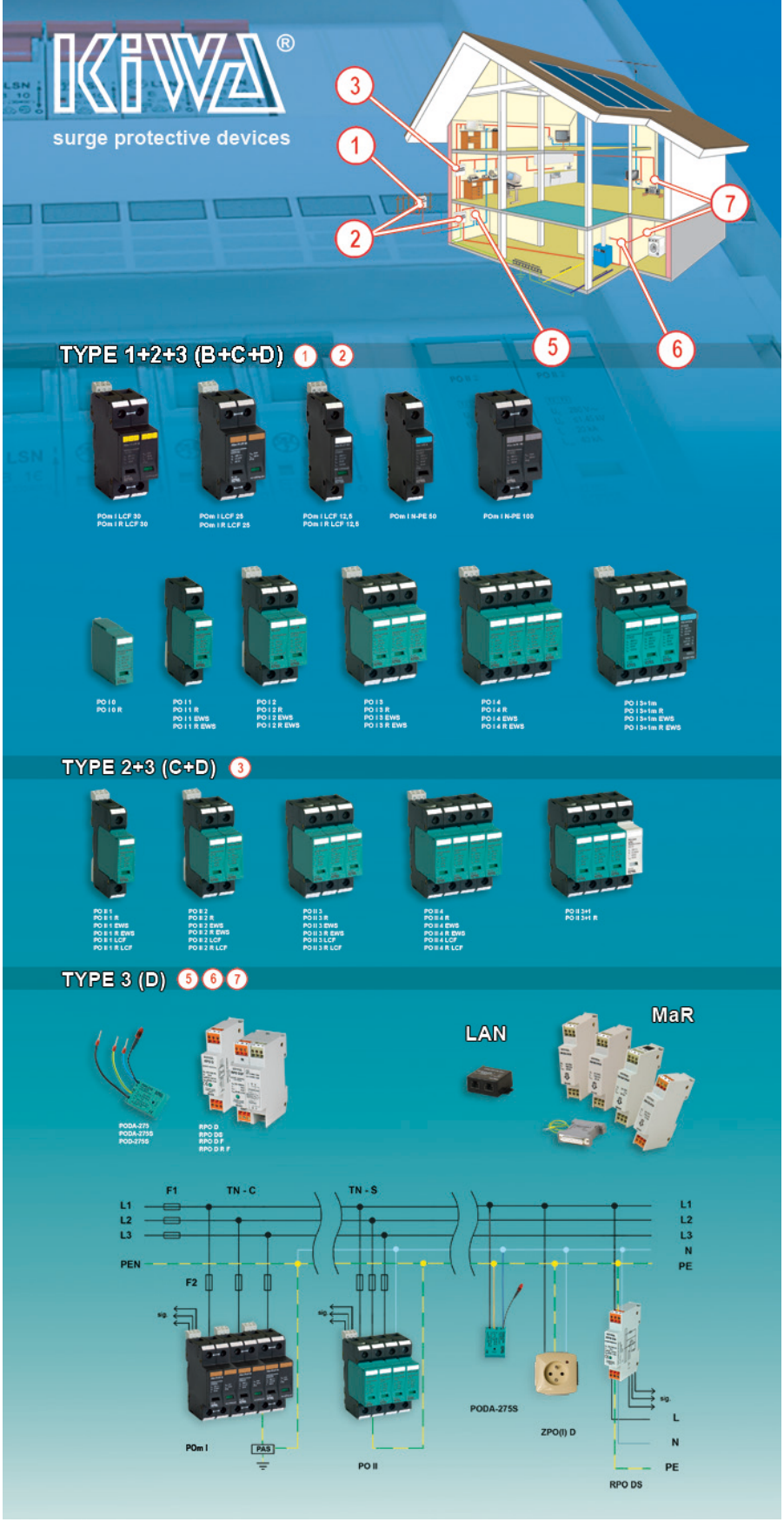
ZPO D - **RED** light indicates status „FAULTY"

CL

For complete assortment of SPD please see KIWA Catalogue or contact technical support, both on www.kiwa.sk

The table „ Tolerance ranges for inspection of SPD KIWA" is published on web page www.kiwa.sk

132-0108-4en



KIWA sk, s. r.o.
Krivánska 5
SK - 949 01 Nitra

Office:
Jakuba Haška 1, SK - 949 01 Nitra
phone: +421/37/6927 011
e-mail: kiwa@kiwa.sk
www.kiwa.sk

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