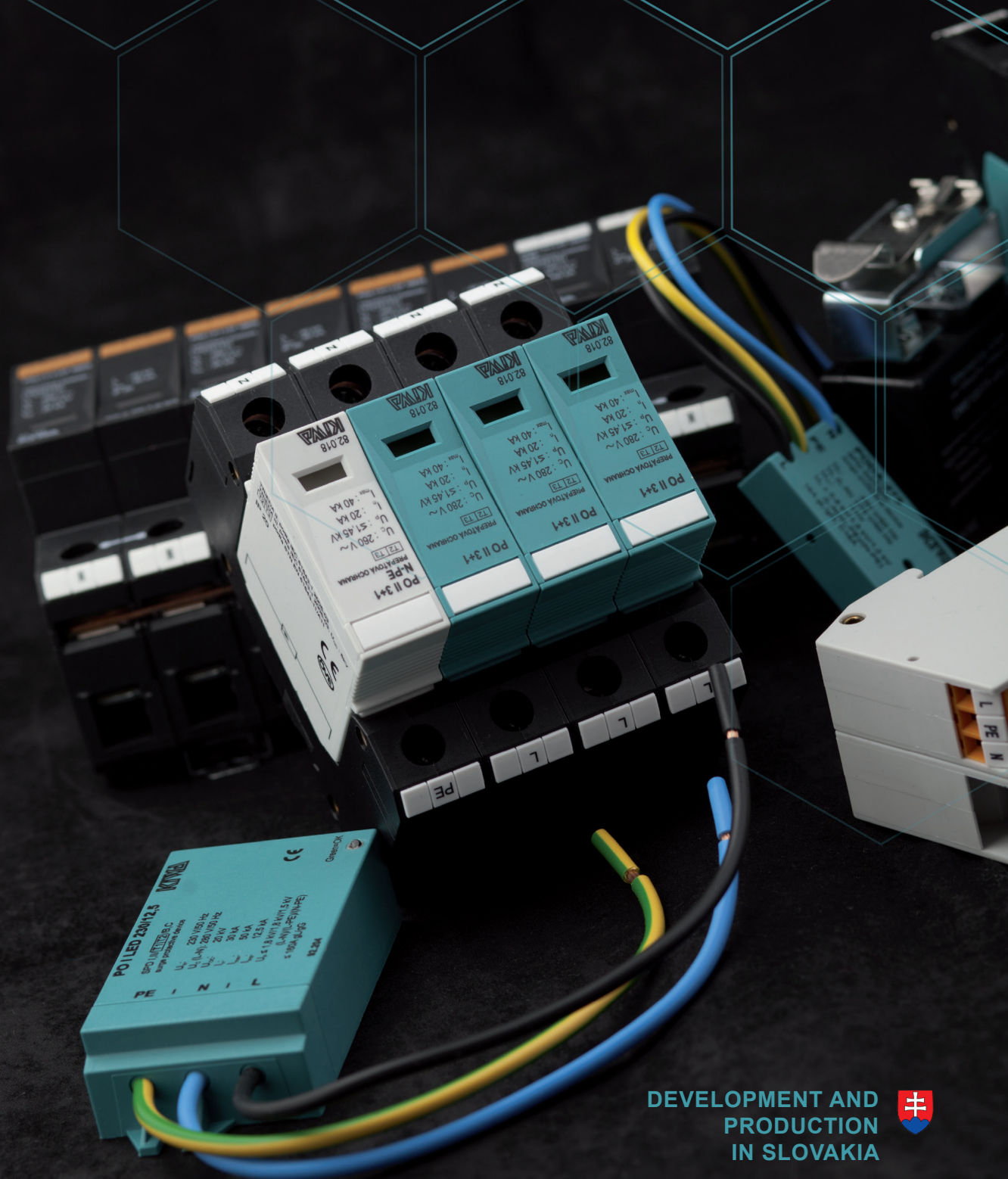


KIWA[®] sk
surge protective devices

RECOMMENDATIONS
FOR APPLICATIONS
OF SPD KIWA

APPLICATION HANDBOOK 2025



DEVELOPMENT AND
PRODUCTION
IN SLOVAKIA



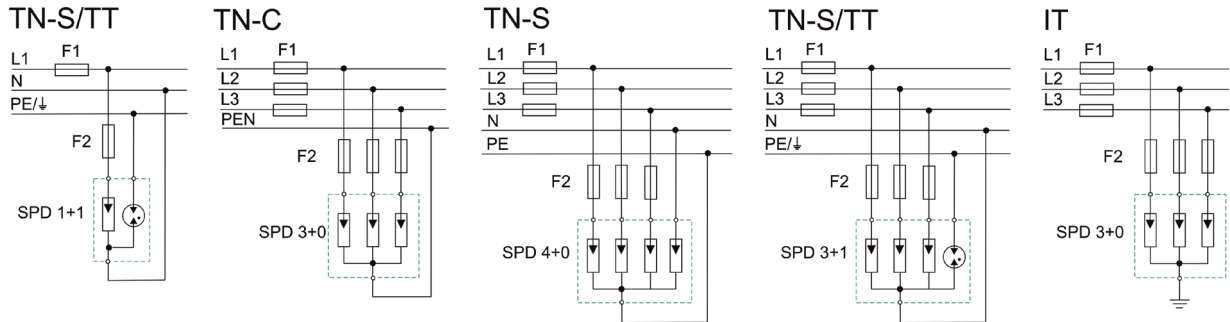
... our products protect everywhere!

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

LPL - Lightning Protection Level

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

- 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. P0m I LCF 3 75kA 280V/25kA (Order No. 81.130), then individual apartment units can be protected with II. stage of protection, e.g. PO II 1 280V/40kA (Order No. 82.001)

$I_{imp}=50 \text{ kA}$

MIDDLE THREAT OF INSTALLATION

LPL III

- 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 (10/350 μ s), then individual apartment units can be protected with I. stage of protection e.g. PO I 1 280V/12,5kA (Order No. 81.001)

$I_{imp}=50 \text{ kA}$

HIGH THREAT OF INSTALLATION

LPL I

LPL II

- 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 (10/350 μ s), then individual apartment units can be protected with I. stage of protection e.g. P0m I LCF 25kA 280V/25kA (Order No. 81.124)
- hospitals
- public buildings
- objects close to high and very high voltage lines
- objects with metallic roof or frame
- objects with earthed antenna or air condition
- schools
- supermarkets
- administration buildings
- objects with a metal structure

$I_{imp}=100 \text{ kA}$

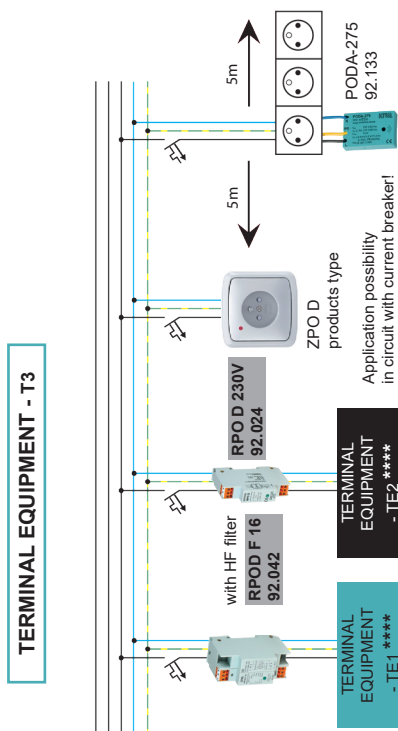
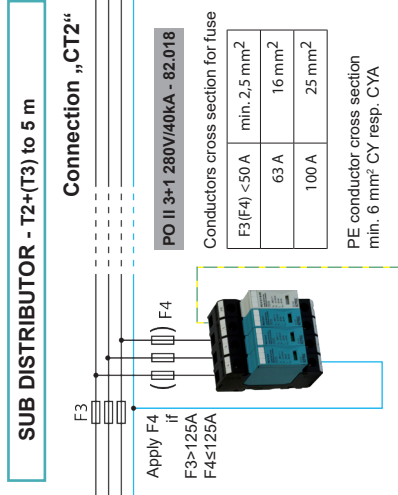
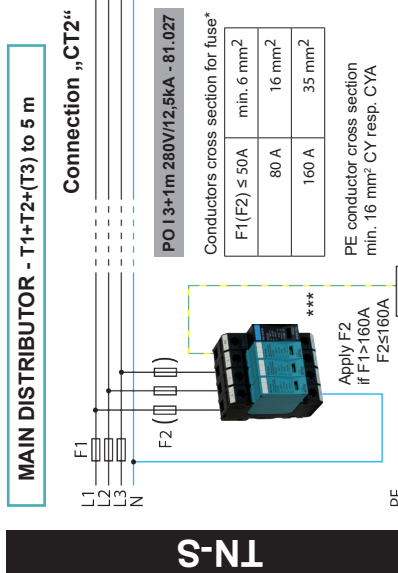
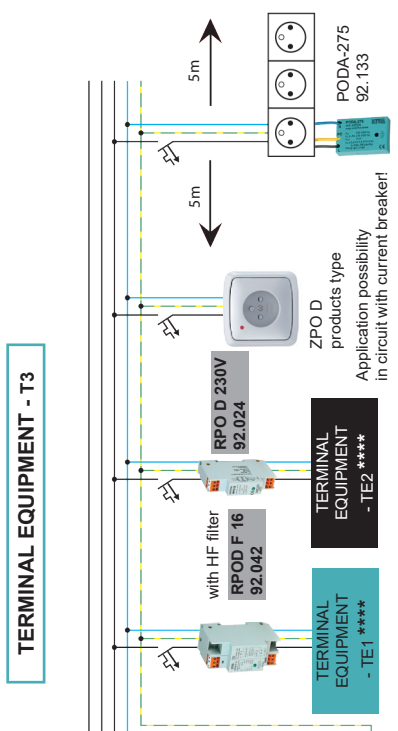
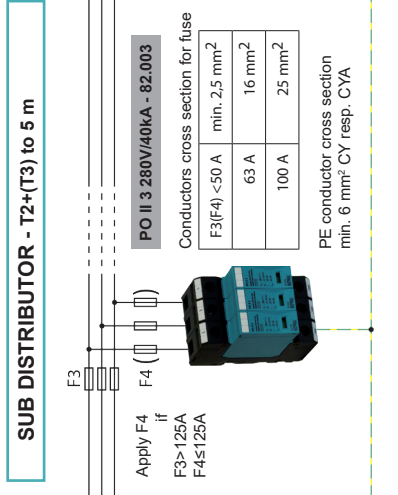
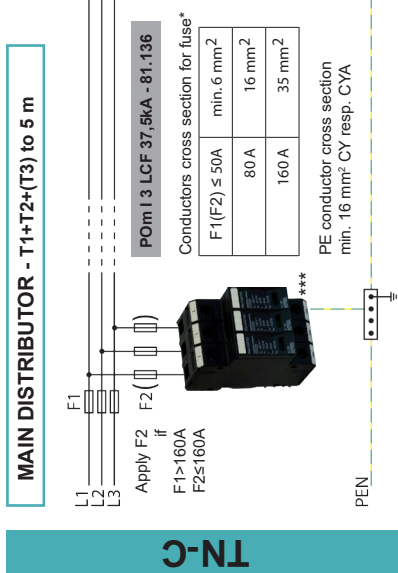
$I_{imp}=75 \text{ kA}$

INDUSTRIAL AND SPECIAL APPLICATIONS

LPL I

- 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

$I_{imp}=100 \text{ kA}$



TYPE	Order No.	TN-C	TN-S
1	POm1 3 LCF 37.5kA 280V/12.5kA	81.136	
2	POm1 3 R LCF 37.5kA 280V/12.5kA	81.137	
3	POm1 3+1 LCF 50kA 280V/12.5kA	81.140	
4	POm1 3+1 R LCF 50kA 280V/12.5kA	81.141	
5	POm1 4 LCF 50kA 280V/12.5kA	81.138	
6	POm1 4 R LCF 50kA 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	

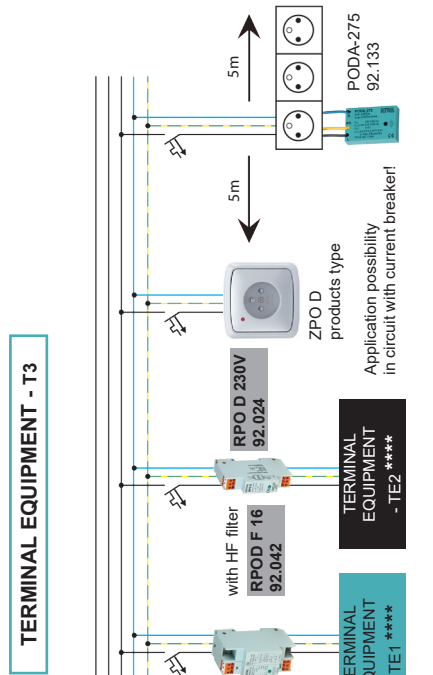
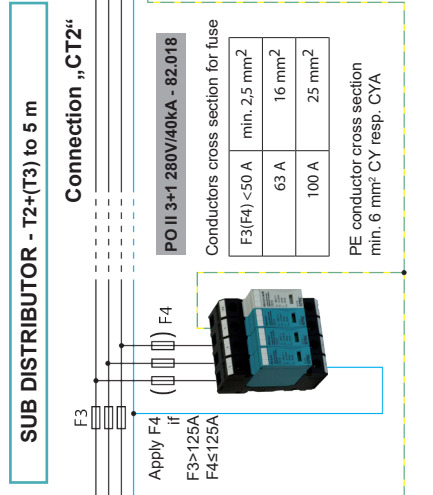
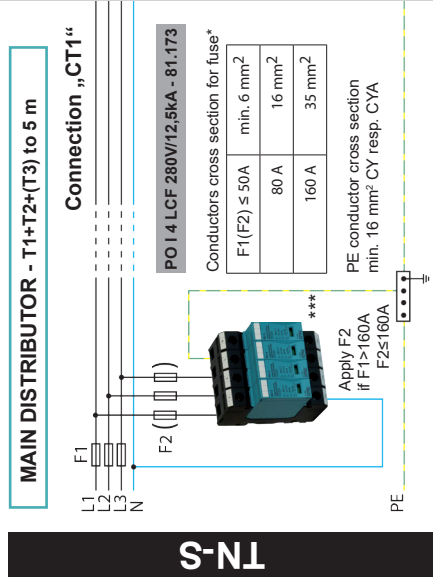
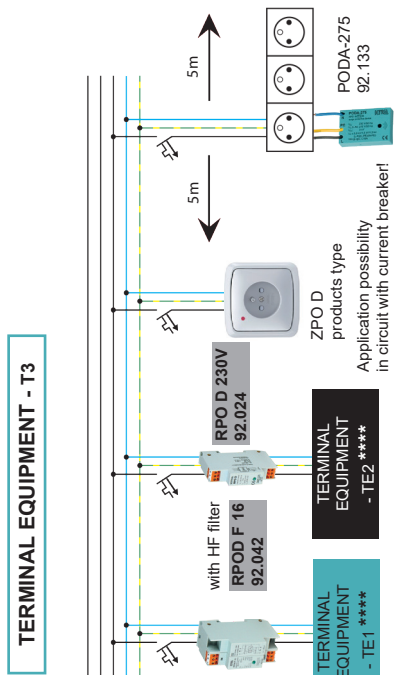
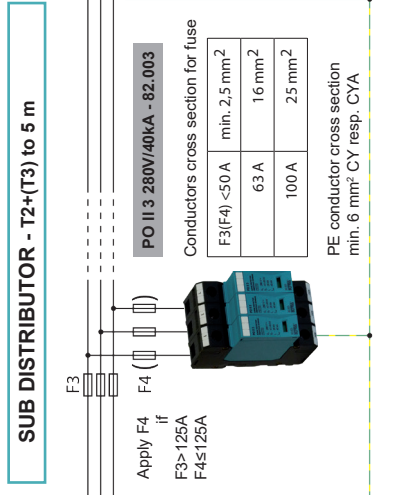
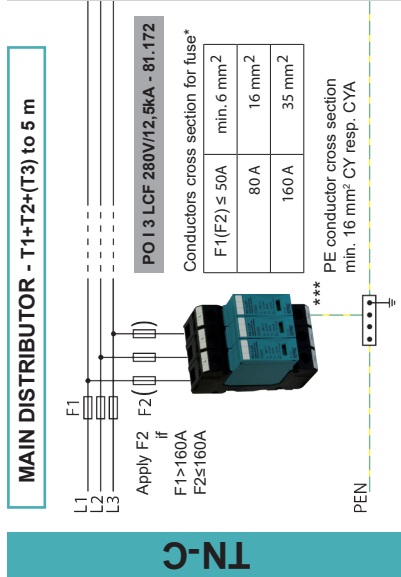
TYPE	Order No.	TN-C	TN-S
1	PO II 3 280V/40kA	82.003	
2	PO II 3 R 280V/40kA	82.007	
3	PO II 3 LCF 280V/40kA	82.009	
4	PO II 3 R LCF 280V/40kA	82.011	
5	PO II 3 EWS 280 V/40 kA	82.013	
6	PO II 3 R EWS 280V/40kA	82.015	
7	PO II 3+1 280V/40kA	82.018	
8	PO II 3+1 R 280V/40kA	82.020	
9	PO II 4 280V/40kA	82.004	
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	

TYPE	Order No.	Current	****
1	RPO D 230V	16 A	TE2
2	RPO DS 230V	16 A	TE2
3	RPOD F 16	16 A	TE1
4	RPOD R F 16	16 A	TE1
5	RPOD F 6	6 A	TE1
6	RPOD R F 6	6 A	TE1
7	RPOD F 16-L	16 A	TE1
8	RPOD R F 16-L	16 A	TE1
9	RPOD F 6-L	6 A	TE1
10	RPOD R F 6-L	6 A	TE1

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

basic version
version with remote signalling - 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 signalling contact SPD



TYPE	Order No.	TN-C	TN-S
1	PO I 3 LCF 280V/12,5kA	81.172	
2	PO I 3 R LCF 280V/12,5kA	81.176	
3	PO I 3 280V/12,5kA	81.003	
4	PO I 3 R 280V/12,5kA	81.007	
5	PO I 3 EWS 280V/12,5kA	81.013	
6	PO I 3 R EWS 280V/12,5kA	81.015	
7	PO I 3+1m 280V/12,5kA	81.027	
8	PO I 3+1m R 280V/12,5kA	81.028	
9	PO I 3+1m EWS 280V/12,5kA	81.029	
10	PO I 3+1m R EWS 280V/12,5kA	81.030	
11	PO I 4 LCF 280V/12,5kA	81.173	
12	PO I 4 R LCF 280V/12,5kA	81.177	
13	PO I 4 280V/12,5kA	81.004	
14	PO I 4 R 280V/12,5kA	81.008	
15	PO I 4 EWS 280V/12,5kA	81.014	
16	PO I 4 R EWS 280V/12,5kA	81.016	

TYPE	Order No.	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	

TYPE	Order No.	Current	****
1	RPO D 230V	16A	TE2
2	RPO DS 230V	16A	TE2
3	RPOD F 16	16A	TE1
4	RPOD R F 16	16A	TE1
5	RPOD F 6	6A	TE1
6	RPOD R F 6	6A	TE1
7	RPOD F 16-L	16A	TE1
8	RPOD R F 16-L	16A	TE1
9	RPOD F 6-L	6A	TE1
10	RPOD R F 6-L	6A	TE1

basic version
 version with remote signalling - 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

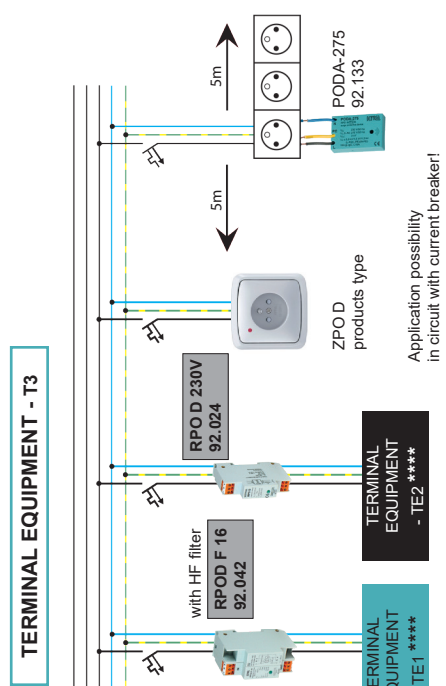
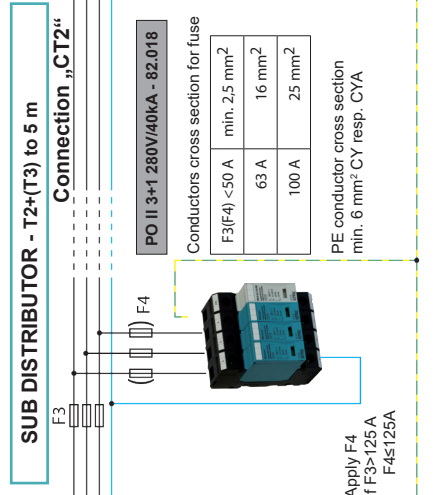
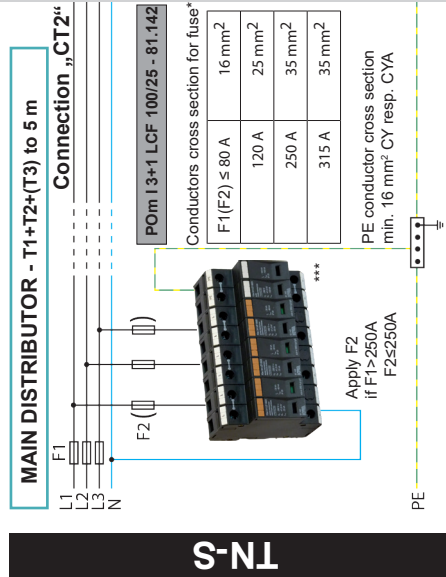
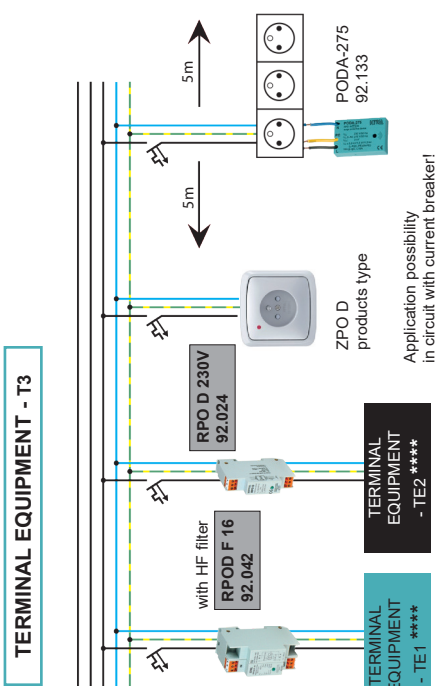
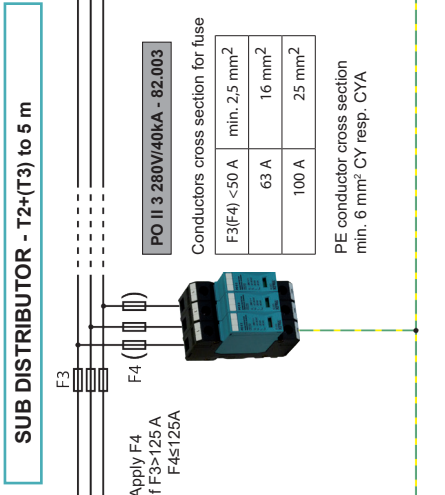
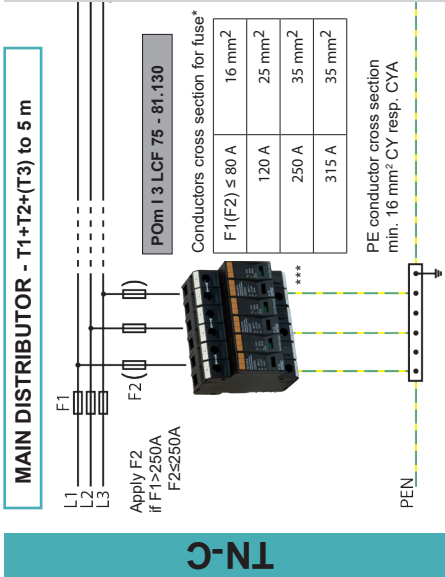
*** SPD image is illustrative

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

LCF - leakage current free
 EWS - wear indicator SPD
 R - remote signalling contact SPD

OBJECTS WITH LIGHTNING PROTECTION LEVEL LPL I
OBJECTS WITH LIGHTNING PROTECTION LEVEL LPL II

OBJECTS WITH LIGHTNING PROTECTION LEVEL LPL I
OBJECTS WITH LIGHTNING PROTECTION LEVEL LPL II

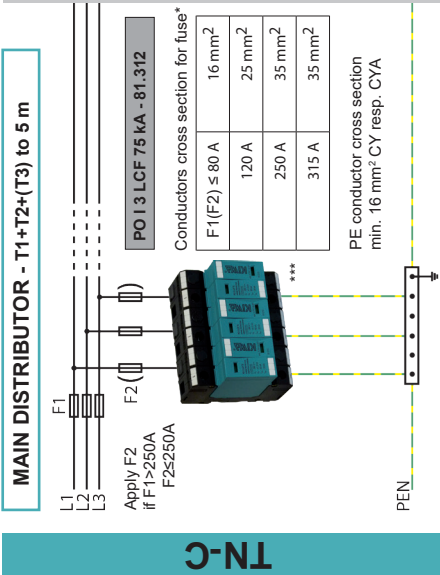


TYPE	Order No.	TN-C	TN-S
1	POm I 3 LCF 90kA 280V/30kA	81.132	
2	POm I 3 R LCF 90kA 280V/30kA	81.133	
3	POm I 3+1 LCF 100/30kA 280V/30kA	81.152	
4	POm I 3+1 R LCF 100/30kA 280V/30kA	81.153	
5	POm I 4 LCF 120kA 280V/30kA	81.134	
6	POm I 4 R LCF 120kA 280V/30kA	81.135	
7	POm I 3 LCF 75kA 280V/25kA	81.130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

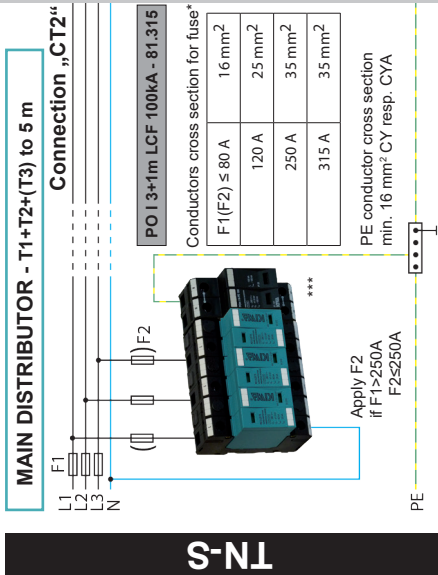
TYPE	Order No.	TN-C	TN-S
1	PO II 3 280V/40kA	82.003	
2	PO II 3 R 280V/40kA	82.007	
3	PO II 3 LCF 280V/40kA	82.009	
4	PO II 3 R LCF 280V/40kA	82.011	
5	PO II 3 EWS 280 V/40 kA	82.013	
6	PO II 3 R EWS 280V/40kA	82.015	
7	PO II 3+1 280V/40kA	82.018	
8	PO II 3+1 R 280V/40kA	82.020	
9	PO II 4 280V/40kA	82.004	
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	

TYPE	Order No.	Current	****
1	RPO D 230V	16 A	TE2
2	RPO DS 230V	16 A	TE2
3	RPOD F 16	16 A	TE1
4	RPOD R F 16	16 A	TE1
5	RPOD F 6	6 A	TE1
6	RPOD R F 6	6 A	TE1
7	RPOD F 16-L	16 A	TE1
8	RPOD R F 16-L	16 A	TE1
9	RPOD F 6-L	6 A	TE1
10	RPOD R F 6-L	6 A	TE1

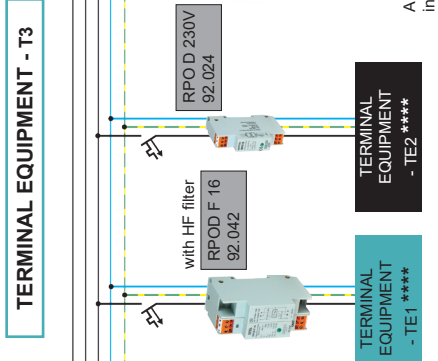
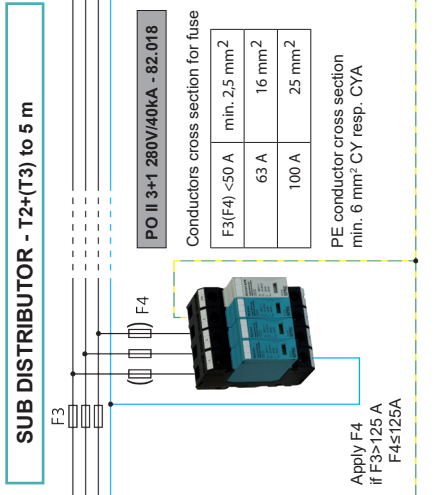
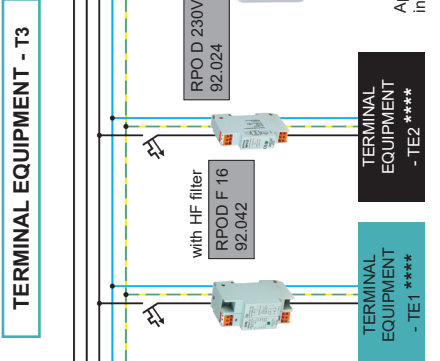
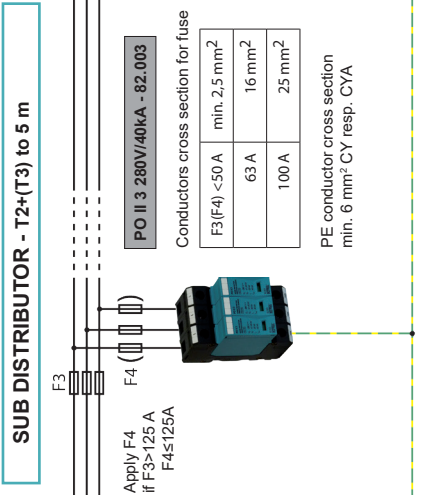
basic version
 version with remote signalling - R
 possibility of application in front of electricity meter** as well as after current breaker
 * Valid only in V - connection of SPD (T - connection as specified by EN 33 2000-5-534)
 ** Valid only with the agreement an electricity supplier
 *** SPD image is illustrative
 LCF - leakage current free
 EWS - wear indicator SPD
 R - remote signalling contact SPD
 F - with HF filter
 L - without overvoltage protection on output



TN-C



TN-S



TYPE	Order No.	TN-C	TN-S
1	PO I 3 LCF 75kA 280V/25kA	81.312	
2	PO I 3 R LCF 75kA 280V/25kA	81.318	
3	PO I 4 LCF 100kA 280V/25kA	81.313	
4	PO I 4 R LCF 100kA 280V/25kA	81.319	
5	PO I 3+1m LCF 100kA 280V/25kA	81.315	
6	PO I 3+1m R LCF 100kA 280V/25kA	81.321	

TYPE	Order No.	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	

TYPE	Order No.	Current	****
1	RPO D 230V	16 A	TE2
2	RPO DS 230V	16 A	TE2
3	RPOD F 16	16 A	TE1
4	RPOD R F 16	16 A	TE1
5	RPOD F 6	6 A	TE1
6	RPOD R F 6	6 A	TE1
7	RPOD F 16-L	16 A	TE1
8	RPOD R F 16-L	16 A	TE1
9	RPOD F 6-L	6 A	TE1
10	RPOD R F 6-L	6 A	TE1

basic version
 version with remote signalling - 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
 R/S - remote signalling contact SPD
 F - with HF filter
 L - without overvoltage protection on output
 LCF - leakage current free
 EWS - wear indicator SPD
 R - remote signalling contact SPD

Application of SPD KIWA in electro installations

TN-C, TN-C-S
PO I 3 280V/12,5kA
POm I 3 LCF 37,5kA 280V/25kA
PO I 3 LCF 75kA 280V/25kA
POm I 3 LCF 75kA 280V/25kA

TN-S
PO I 3+1m 280V/12,5kA
PO I 4 280V/12,5kA
POm I 3+1 LCF 50kA 280V/12,5kA
POm I 4 LCF 50kA 280V/12,5kA
POm I 3+1 LCF 100/25kA 280V/25kA
POm I 4 LCF 100kA 280V/25kA
PO I 3+1m LCF 100kA 280V/25kA
PO I 4 LCF 100kA 280V/25kA

monoblock



POm I 3 LCF 75 280V/25kA
(Order No. 81.130)
in front of the electricity meter

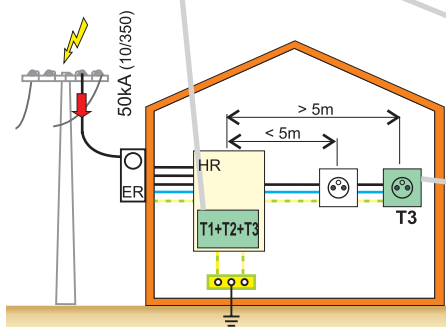
SPD with replaceable module



PO I 3 LCF 75 280V/25kA
(Order No. 81.312)



PO I 3+1m 280V/12,5kA
(Order No. 81.025)



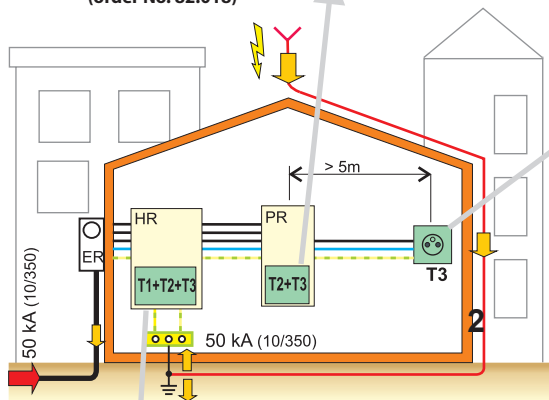
LPL III, IV $I_{imp} = 50 \text{ kA}$ (10/350)
Building without air-terminal with electrical connection to the outer line.



PO II 3+1 280V/40kA
(order No. 82.018)

TN-C, TN-C-S
PO II 3 280V/40kA
PO II 1 280V/40kA

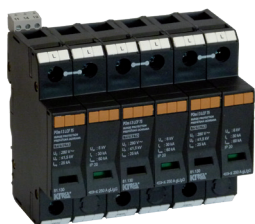
TN-S
PO II 3+1 280V/40kA
PO II 4 280V/40kA
PO II 1+1 280V/40kA
PO II 2 280V/40kA



LPL III, IV $I_{imp} = 50 \text{ kA}$ (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 37,5kA 280V/25kA
PO I 3 LCF 75kA 280V/25kA
POm I 3 LCF 75kA 280V/25kA

TN-S
PO I 3+1m 280V/12,5kA
PO I 4 280V/12,5kA
POm I 3+1 LCF 50kA 280V/12,5kA
POm I 4 LCF 50kA 280V/12,5kA
POm I 3+1 LCF 100/25kA 280V/25kA
POm I 4 LCF 100kA 280V/25kA
PO I 3+1m LCF 100kA 280V/25kA
PO I 4 LCF 100kA 280V/25kA



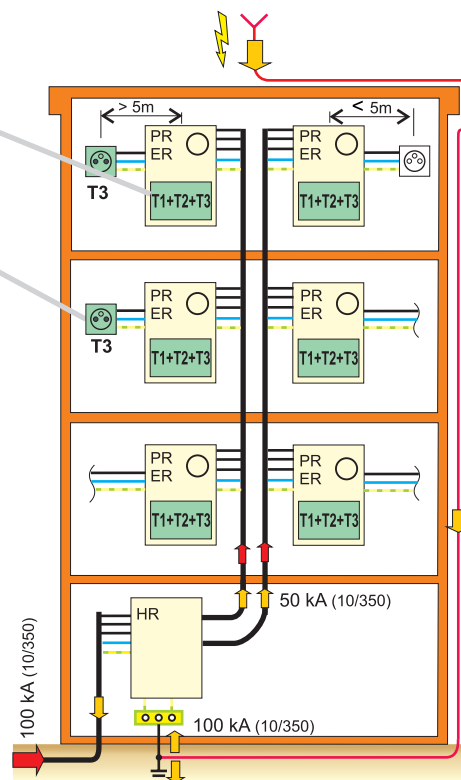
POm I 3 R LCF 75kA 280V/25kA
(Order No. 81.131)



PO I 3 R LCF 75kA 280V/25kA
(Order No. 81.318)

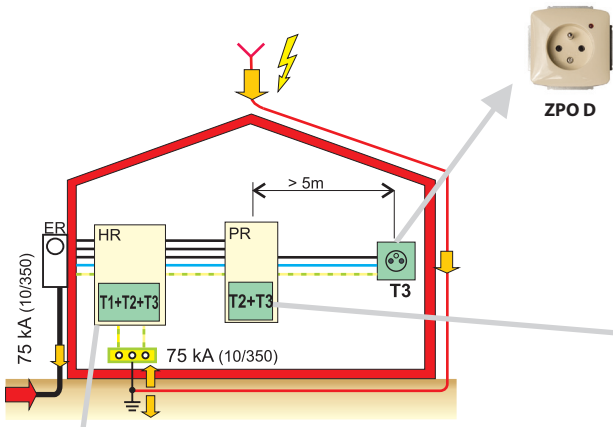


PO I 3+1m R 280V/12,5kA
(Order No. 81.028)



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

Application of SPD KIWA in electro installations



ZPO D



PO II 3+1 280V/40kA
(Order No. 82.018)

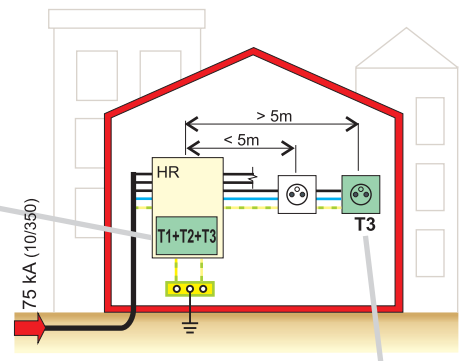
TN-C, TN-C-S
PO II 3 280V/40kA
PO II 1 280V/40kA
TN-S
PO II 3+1 280V/40kA
PO II 4 280V/40kA
PO II 1+1 280V/40kA
PO II 2 280V/40kA

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



POm I 3 LCF 75kA 280V/25kA
(Order No. 81.130)

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



LPL II $I_{imp} = 75 \text{ kA}$ (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.



PO II 3+1 280V/40kA
(Order No. 82.018)

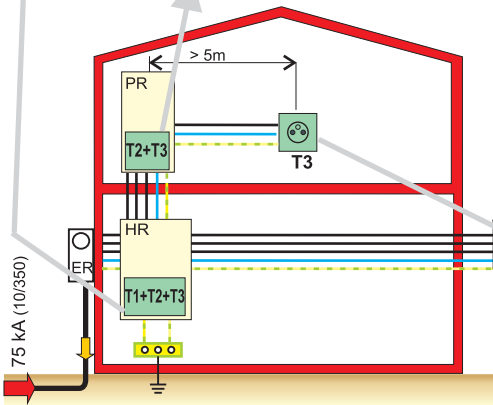
TN-C, TN-C-S
PO II 3 280V/40kA
PO II 1 280V/40kA
TN-S
PO II 3+1 280V/40kA
PO II 4 280V/40kA
PO II 1+1 280V/40kA
PO II 2 280V/40kA



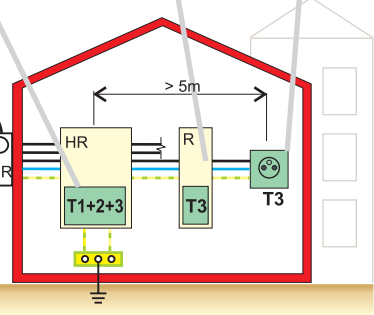
RPO D



ZPO D



ZPO D



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

Application of SPD KIWA in electro installations

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

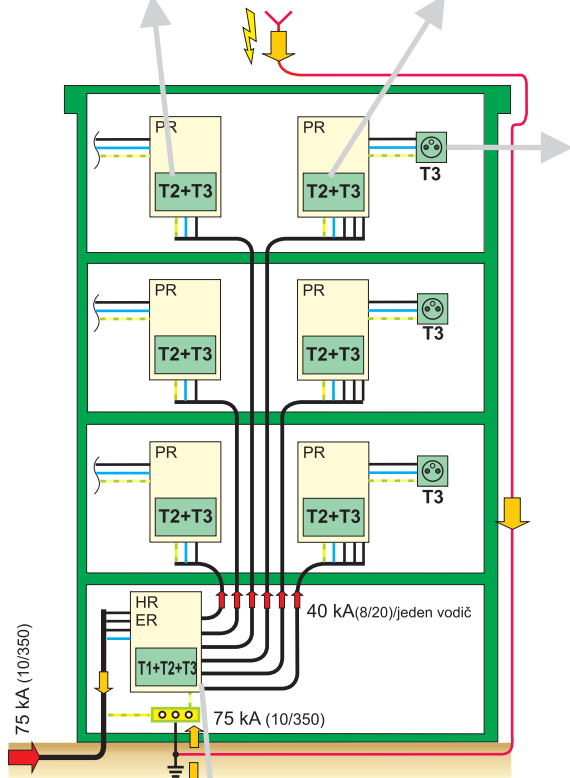
TN-C, TN-C-S
PO II 3 280V/40kA
TN-S
PO II 3+1 280V/40kA
PO II 4 280V/40kA



PO II 1+1 280V/40kA
(Order No. 82.017)



PO II 3+1 280V/40kA
(Order No. 82.018)



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



POm I 3 LCF 75kA 280V/25kA
(Order No. 81.130)

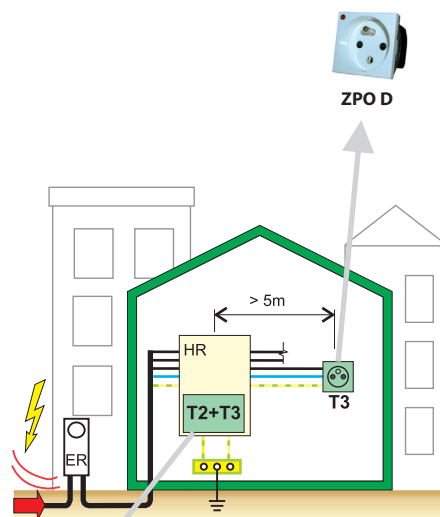


PO I 3 LCF 75kA 280V/25kA
(Order No. 81.312)

LEGEND

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

TN-C, TN-C-S
POm I 3 LCF 75 280V/25kA
PO I 3 LCF 75kA 280V/25kA
TN-S
POm I 3+1 LCF 100/25 280V/25kA
POm I 4 LCF 100 280V/25kA
PO I 3 LCF 75kA 280V/25kA
PO I 4 LCF 100kA 280V/25kA



$I_{max} = 40 \text{ kA}$ (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.

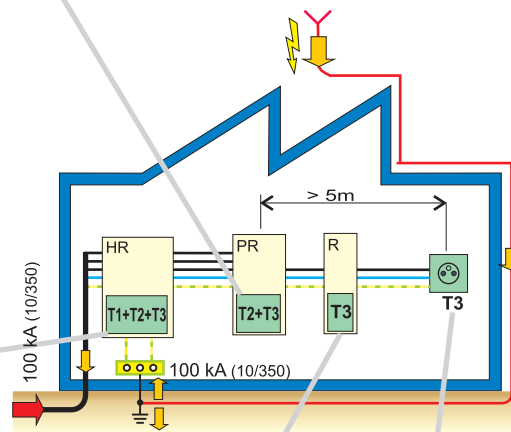


ZPO D



PO II 3+1 280V/40kA
(Order No. 82.018)

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



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



RPOD

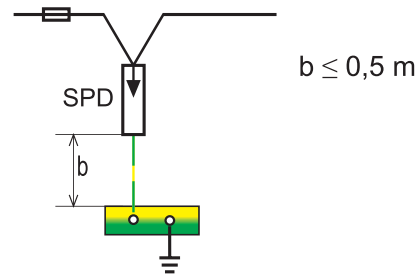
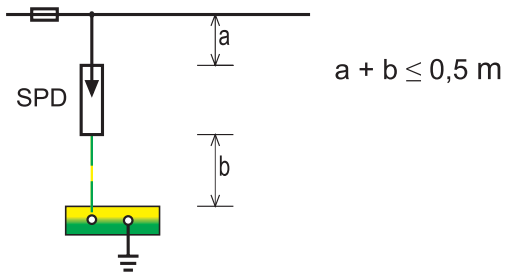


ZPO D

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 accessed by an 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.

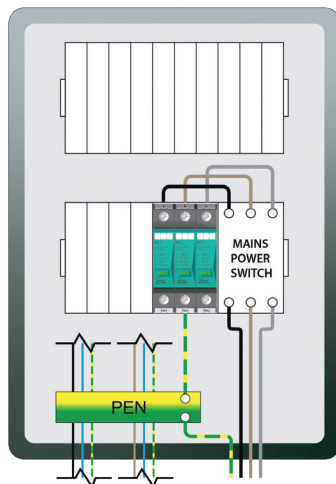


Important are also principles of conductors arrangement:

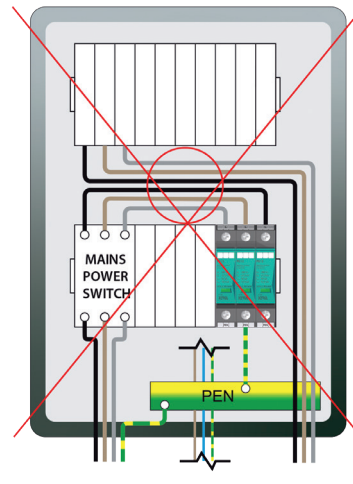
- there must be prevented:
 - parallel wiring of not protected conductors (e.g. cables to motors) to protected conductors (e.g. supply lines),
 - crossing of not protected with protected cord,
 - induction loops of conductors,
- the earth clamp of SPD must be always connected with earth clamp of appliance.

TN-C, TN-C-S

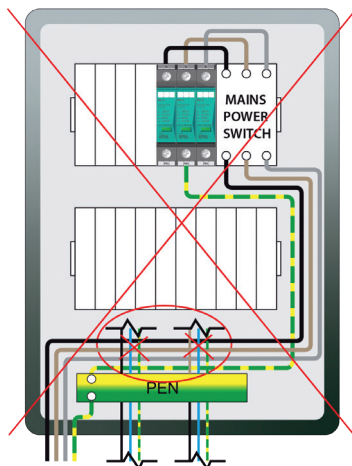
3-phase, 4-wire system (L1, L2, L3 a PEN)



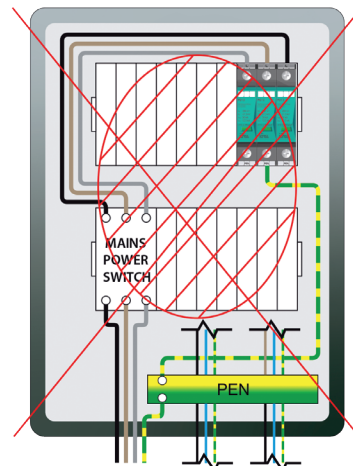
Correct



Wrong



Wrong

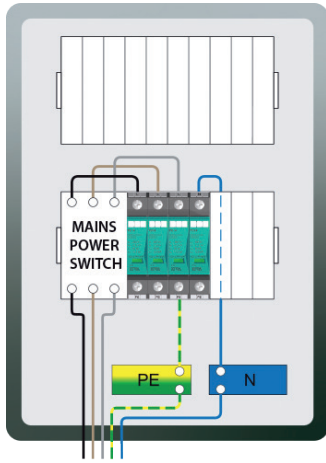


Wrong

Principles of SPD installations in distributors

TN-S

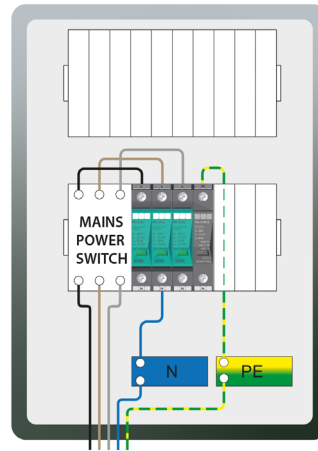
3-phase, 5-wire system (L1, L2, L3, N a PE)



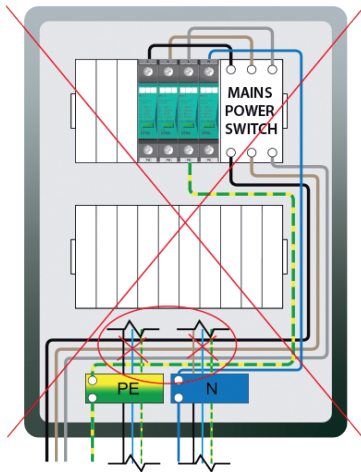
Correct

TN-S/TT

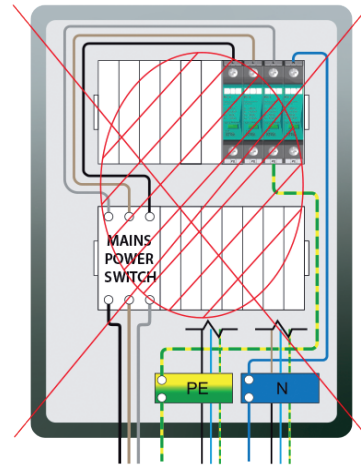
3-phase, 5-wire system (L1, L2, L3, N a PE)



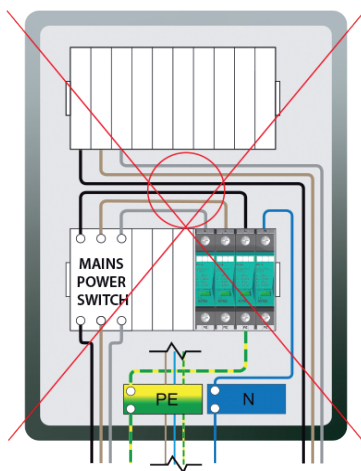
Correct



Wrong



Wrong



Wrong

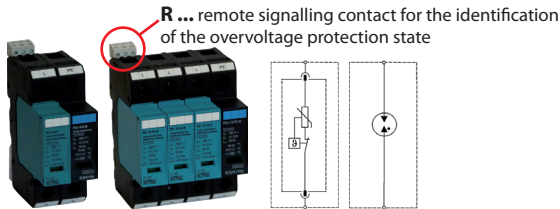
1st level - with replaceable plug-in's **T1+T2+T3 (B+C+D)**

$I_{imp} = 12,5 \text{ kA}$



R ... remote signaling contact

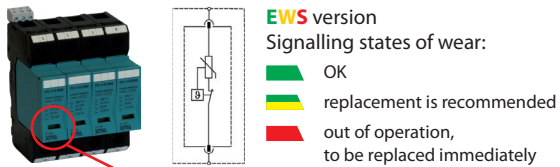
SPD without contact	Order No.	SPD with contact - R	Order No.
PO I 1 280V/12,5kA	81.001	PO I 1 R 280V/12,5kA	81.005
PO I 2 280V/12,5kA	81.002	PO I 2 R 280V/12,5kA	81.006
PO I 3 280V/12,5kA	81.003	PO I 3 R 280V/12,5kA	81.007
PO I 4 280V/12,5kA	81.004	PO I 4 R 280V/12,5kA	81.008
PO I 0 280V/12,5kA (spare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



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

TN-S

SPD without contact	Order No.	SPD with contact - R	Order No.
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



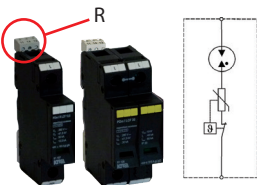
EWS version
Signalling states of wear:
█ OK
█ replacement is recommended
█ out of operation, to be replaced immediately

SPD without contact	Order No.	SPD with contact - R	Order No.
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

EWS ... signal of wear state

1st level - monoblock **T1+T2+T3 (B+C+D)**

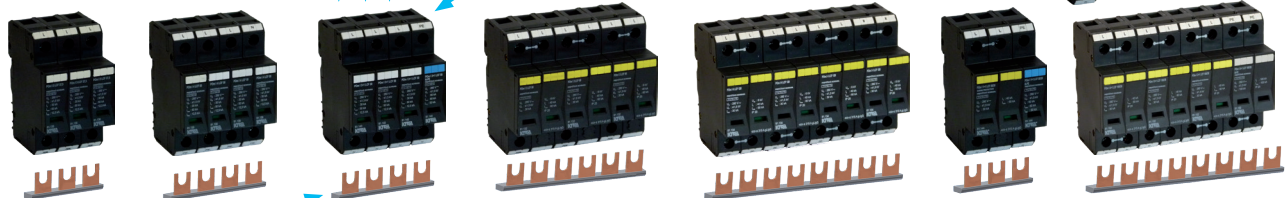
$I_{imp} = 12,5 \text{ kA}, I_{imp} = 25 \text{ kA}, I_{imp} = 30 \text{ kA}$



SPD without contact	Order No.	SPD with contact - R	Order No.
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 No.
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 pieces of monoblock POm I LCF 12,5kA and 1 piece of POm I N-PE 50kA

Busbars	Order No.	Busbars	Order No.	Busbars	Order No.
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 No.	SPD with contact - R	Order No.
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 No.	SPD with contact - R	Order No.
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 No.	SPD with contact - R	Order No.
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

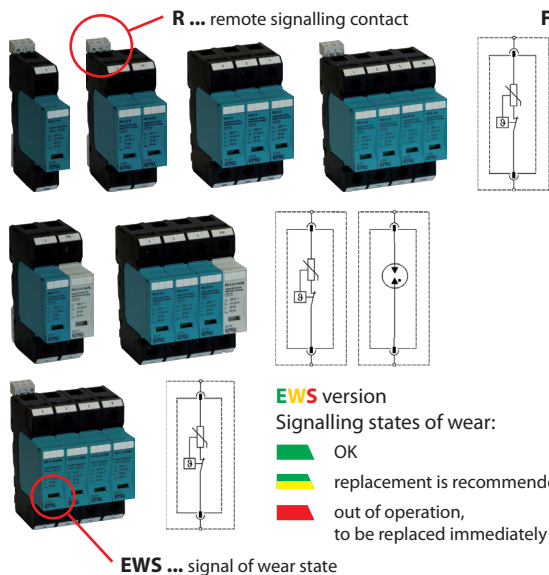


PRODUCT SPECIFICATION

POm I 3 R LCF 90 280V/30kA

- U_c/I_{imp} = max. operating voltage / impulse current
- common current I_{imp}
- version with zero residual current and zero follow current
- remote signalling
- 3 - number of poles
- class I.
- m - non-replaceable unit = monoblock type SPD

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



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

SPD without contact	Order No.	SPD with contact - R	Order No.
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 No.	SPD with contact - R	Order No.
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 No.	SPD with contact - R	Order No.
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 No.	SPD with contact - R	Order No.
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

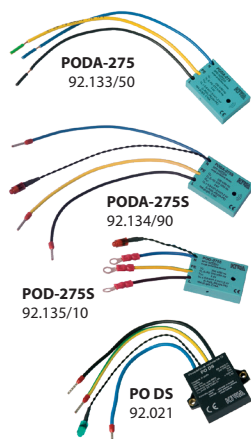
LCF ... version with zero residual current and zero follow current



3rd level **T3** (D)

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

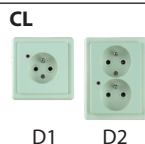
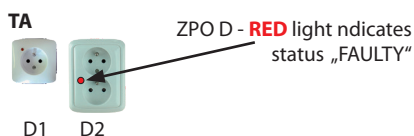
Compact module with HF filter (F) Width only 2 units			
SPD without contact	Order No.	D with contact - R	Order No.
RPOD F 6 230V/6A	92.136	RPOD R F 6 230V/6A	92.137
RPOD F 16 230V/16A	92.042	RPOD R F 16 230V/16A	92.043



SPD modules for sockets		
	Order No.	
PODA-275 acoustic signalling	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
PODA-275S acoustic and optic red signalling	92.134/10	wire end ferrule, lenght of wire 160 mm
	92.134/90	ending and lenght of wire on order
POD-275S (S-optic) optic red signalling	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 signalling	92.021	wire end ferrule, lenght of wire 150 mm



Surge protective sockets							
TANGO D1	Order No.	TANGO D2	Order No.	CLASSIC D1	Order No.	CLASSIC D2	Order No.
ZPO D ATA1 iS-4kV/white	92.069	ZPO D ATA2 iS-4kV/white	92.070	ZPO D ACL1 iS-4kV/white	92.071	ZPO D ACL2 iS-4kV/white	92.072
ZPO D ATA1 iS-4kV/burg.	92.098	ZPO D ATA2 iS-4kV/burg.	92.116	ZPO D ACL1 iS-4kV/beige	92.090	ZPO D ACL2 iS-4kV/brown	92.095
ZPO D ATA1 iS-4kV/gray	92.106	ZPO D ATA2 iS-4kV/ivory	92.111	ZPO D ACL1 iS-4kV/brown	92.105	VALENA D1	Order No.
ZPO D ATA1 iS-4kV/black	92.109	ZPO D ATA2 iS-4kV/black	92.108			ZPO D LVA1 iS-4kV/white	92.077
ZPO D ATA1 iS-4kV/beige	92.110	ZPO D ATA2 iS-4kV/beige	92.107			ZPO D LVA1 iS-4kV/beige	92.078



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

1st level - with replaceable plug-in's **T1** + **T2** + **T3** (B+C+D) $I_{imp} = 25 \text{ kA/pole}$

PO I LCF 25kA

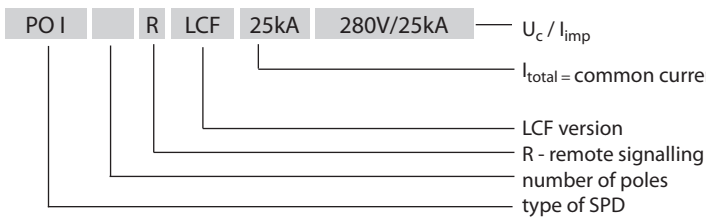


- For protection of mains and appliances in industrial buildings, administration buildings, buildings of civil amenities and detached houses against the effects of overvoltage wave caused by a close, direct or indirect lightning hit
- It decreases overvoltage and restricts overvoltage wave energy
- Installation: into the main distributor
- Usage as the 1st level **T1** of overvoltage protection
- It provides overvoltage protection for appliances installed in the main distributor in the range of **T1**, **T2**, **T3** (coarse, medium and fine protection)
- High diverting capability provided by powerful varistors MOV and lightning arrester
- Zero leaking current (LCF version)
- Zero follow current
- Version: basic part + plug-in protective modules
- Protective modules rotatable by 180° with respect to the base
- Optical and remote signalization of operation state
- Multifunctional terminals for conductors and bus bars
- The products can be connected in „T“ and „V“ connections

TECHNICAL PARAMETERS

TYPE	PO I LCF		
	N-PE		L-N
	50	100	LCF
Number of poles	1	1	1
Nominal voltage U_n	230 V AC	230 V AC	230 V AC
Max. operating voltage T1 T2 T3 U_c	260 V AC	260 V AC	280 V AC
Voltage protection level T1 T2 T3 U_p	≤1,5 kV	≤1,5 kV	≤1,5 kV
Response time t_A	<100 ns	<100 ns	<100 ns
Impulse current (10/350) I_{imp}	50 kA	100 kA	25 kA
Open circuit voltage T3 U_{oc}	10 kV	6 kV	6 kV
Nom. discharge current (8/20) T1 T2 I_n	60 kA	100 kA	40 kA
Max. discharge current (8/20) I_{max}	60 kA	100 kA	60 kA
Prospective short-circuit current of a power supply I_p			25 kA _{ef}
Overcurrent protection gL/gG	-	-	≤250 A
Temporary overvoltage U_{TOV}	-	-	335 V AC
Residual current I_{PE}	<1 μA	<1 μA	<1 μA
Follow current I_f	100 A	100 A	-
Signalling changeover contact	-	-	M3/0.25 Nm, □ max. 0,2 ... 1,5 mm ² , max. 250 V AC/1 A
Status indication of TDD (Thermic Disconnecting Device)	-	-	green (OK)/red (OUT)
Status indication of EWS	-	-	-
Min. ... max. tightening torque			2 ... 3 Nm
Connecting conductor cross section - wire			4 ... 35 mm ²
- cord			4 ... 25 mm ²
Operating temperature range			- 40 ... +80 °C
Degree of protection			IP 20
Colour			black; RAL 9011 - holder/N-PE module turquoise blue; RAL 5018 - plug-in module
Dimensions (mm)/R version (mm)	90 x 64 x 17,5	90 x 64 x 35	90 x 64 x 35/97 x 64 x 35
Mounting on profiled DIN rail			35 x 7,5 mm
Products comply with norms STN EN 61643-11 IEC 61643-1 VDE 0675-06			type 1 T1 + type 2 T2 + type 3 T3 Class I + Class II + Class III Klasse B + Klasse C + Klasse D

PRODUCT SPECIFICATION



SIGNALLING STATES

- OK -
- decrease protection function $I_{imp} = 12,5 \text{ kA}$ -
- out of operation, to be replaced immediately -



TYPE	Order No.	TYPE	Order No.	TYPE	Order No.
PO I 1 LCF 25kA 280V/25kA	81.310	PO I 3 R LCF 75kA 280V/25kA	81.318	PO I 0 LCF 25kA 280V/25kA	81.322
PO I 2 LCF 50kA 280V/25kA	81.311	PO I 4 R LCF 100kA 280V/25kA	81.319		
PO I 3 LCF 75kA 280V/25kA	81.312	PO I 1+1m LCF 50kA 280V/25kA	81.314		
PO I 4 LCF 100kA 280V/25kA	81.313	PO I 1+1m R LCF 50kA 280V/25kA	81.320		
PO I 1 R LCF 25kA 280V/25kA	81.316	PO I 3+1m LCF 100kA 280V/25kA	81.315		
PO I 2 R LCF 50kA 280V/25kA	81.317	PO I 3+1m R LCF 100kA 280V/25kA	81.321		

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

PO Iz



TECHNICAL PARAMETERS

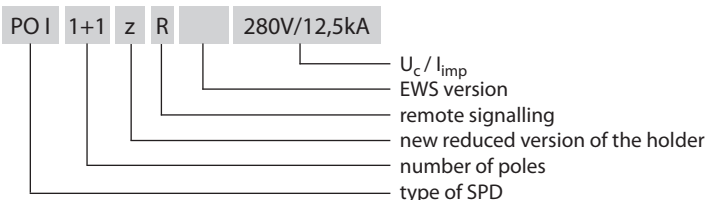
TYPE	PO Iz	
	L-N	N-PE
Number of poles	1	1
Nominal voltage	U_n 230 V AC	230 V AC
Max. operating voltage	U_c 280 V AC	260 V AC
Voltage protection level	U_p $\leq 1,4 \text{ kV}$	$\leq 1,5 \text{ kV}$
Response time	t_A $< 25 \text{ ns}$	$< 150 \text{ ns}$
Impulse current (10/350)	I_{imp} 12,5 kA	12,5 kA
Open circuit voltage	U_{oc} 20 kV	6 kV
Nominal discharge current (8/20)	I_n 30 kA	20 kA
Max. discharge current (8/20)	I_{max} 50 kA	40 kA
Prospective short-circuit current of a power supply	I_p 25 kA _{ef}	-
Overcurrent protection gL/gG	$\leq 160 \text{ A}$	-
Temporary overvoltage	U_{TOV} 335 V AC	-
Residual current	I_{PE} -	$< 1 \mu\text{A}$
Follow current	I_f -	100 A
Signalling changeover contact	M3/0.25 Nm, \square max. 1,5 mm ² , max. 250 V AC/1 A	-
Status indication of TDD (Thermic Disconnecting Device)	green (OK)/ red (OUT)	-
Status indication of EWS	green (OK)/ yellow/red (OUT)	-
Min. ... max. tightening torque	2 ... 3 Nm	
Connecting conductor cross section - wire	4 ... 25 mm ²	
- cord	4 ... 25 mm ²	
Operating temperature range	- 40 ... +80 °C	
Degree of protection	IP 20	
Colour	- plug-in varistor: turquoise blue; RAL 5018	light grey; RAL 7035
	- holder: black; RAL 9011	
Dimensions (mm)/R version (mm)	82 x 64 x 17,5 / 90 x 64 x 17,5	82 x 64 x 17,5
Mounting on profiled DIN rail	35 x 7,5 mm	
Products comply with norms	STN EN 61643-1 IEC 61643-1 VDE 0675-06	type 1 T1 + type 2 T2 + type 3 T3 Class I + Class II + Class III Klasse B + Klasse C + Klasse D

The new reduced version of the holder KIWA SPD extends the connectivity application capabilities with leading manufacturers of modular components.

- For protection of mains and appliances in small industrial buildings, administration buildings, buildings of civic amenities, detached houses against the effects of overvoltage wave caused by a close, direct or indirect lightning hit
- It decreases overvoltage and restricts overvoltage wave energy
- Installation: into the main distributor
- Usage as the 1st level (**T1**, coarse protection) in a 3-level overvoltage protection concept
- Provides overvoltage protection for appliances placed in the main distributor in the range **T1**, **T2**, **T3** (coarse, medium and fine protection)
- High diverting cable ability provided by powerful varistors MOV
- Version: basic part + plug-in protective modules
- Protective modules rotatable by 180° with respect to the base
- Optical and remote signalization of operation state
- Multifunctional terminals for conductors and bus bars

PRODUCT SPECIFICATION

SIGNALLING STATES



OK -

decrease protection function $I_{imp} = 12,5 \text{ kA}$ -

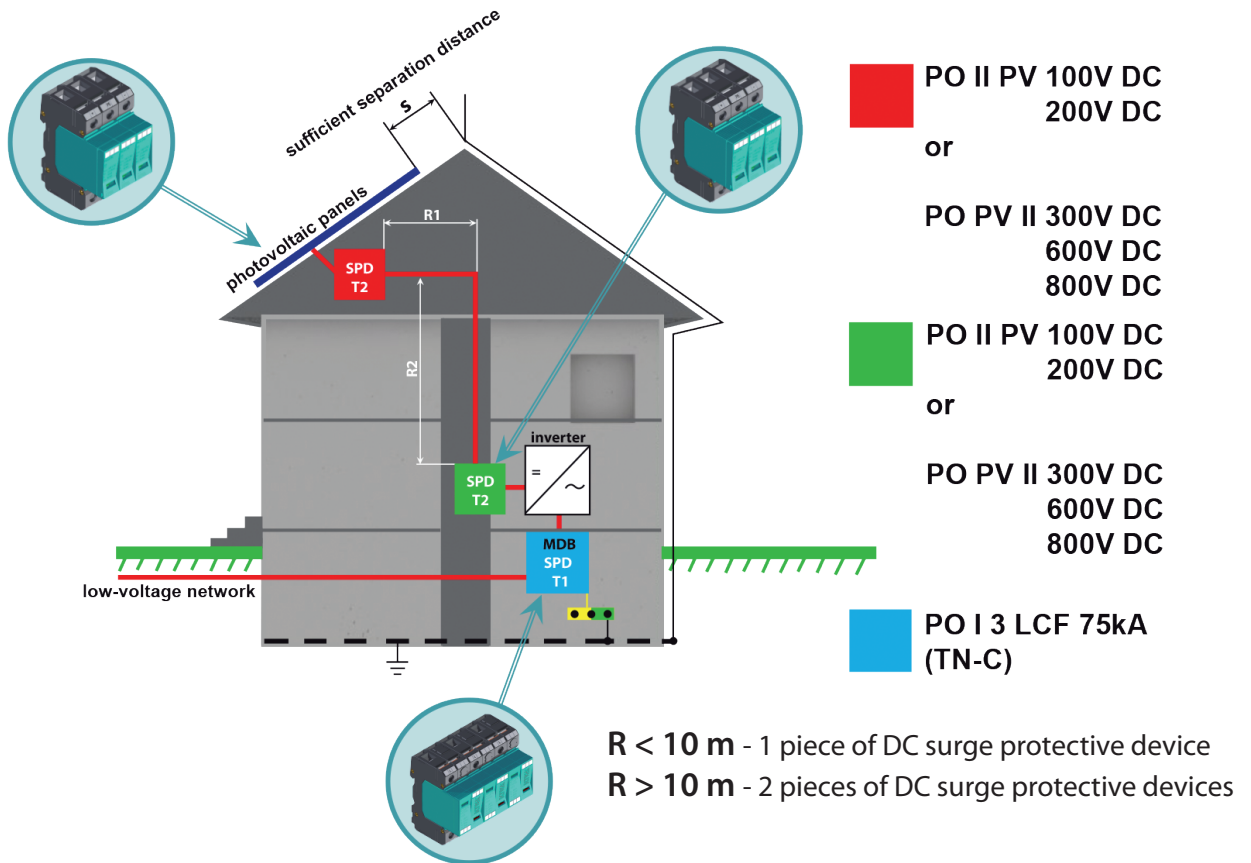
out of operation, to be replaced immediately -



TYPE	Order No.	TYPE	Order No.	TYPE	Order No.	TYPE	Order No.
PO I 1z	83.001	PO I 2z	83.002	PO I 3z	83.003	PO I 4z	83.004
PO I 1z R	83.005	PO I 2z R	83.006	PO I 3z R	83.007	PO I 4z R	83.008
PO I 1z EWS	83.023	PO I 2z EWS	83.024	PO I 3z EWS	83.013	PO I 4z EWS	83.014
PO I 1z R EWS	83.025	PO I 2z R EWS	83.026	PO I 3z R EWS	83.015	PO I 4z R EWS	83.016
PO I 1+1z	83.009	PO I 0z	83.017	PO I 0z N-PE	83.018		
PO I 1+1z R	83.011	PO I 0z EWS	83.020	PO I 1z N-PE	83.019		

Photovoltaic systems up to 1000V DC. Inverter in the technical room.

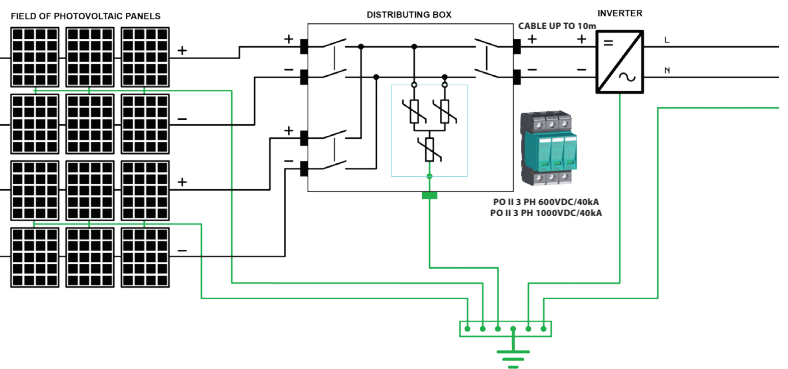
- for family houses, where there is **sufficient** separation distance $s > 0,5 \text{ m}$



EXAMPLES OF INSTALLATION FOR PHOTOVOLTAIC - DC SIDE

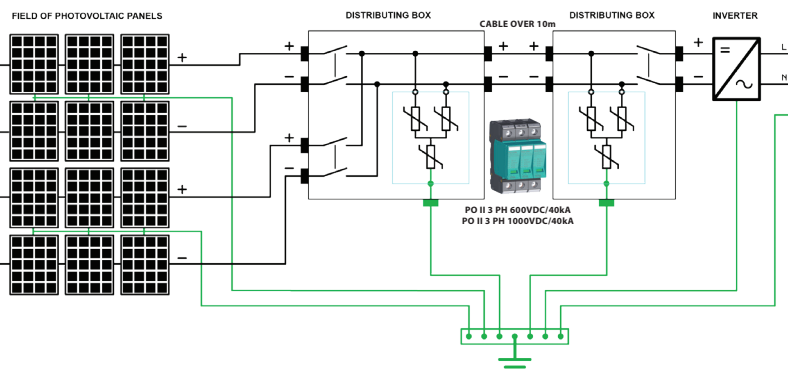
- With inverter located nearby photovoltaic panels

a.) Cable up to 10m, is being installed 1x PO II PV



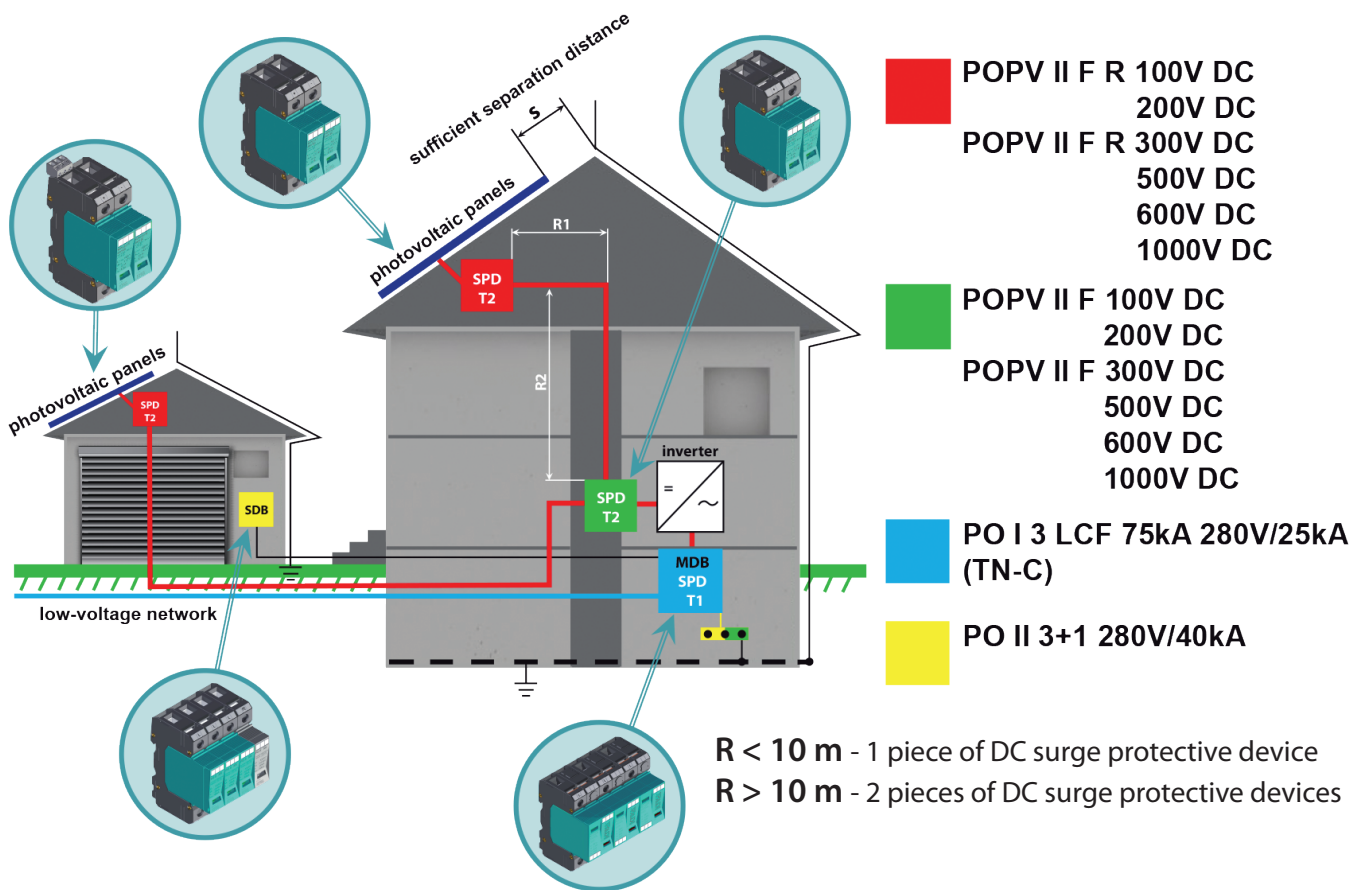
- With remote inverter

b.) Cable over 10m, is being installed 2x PO II PV

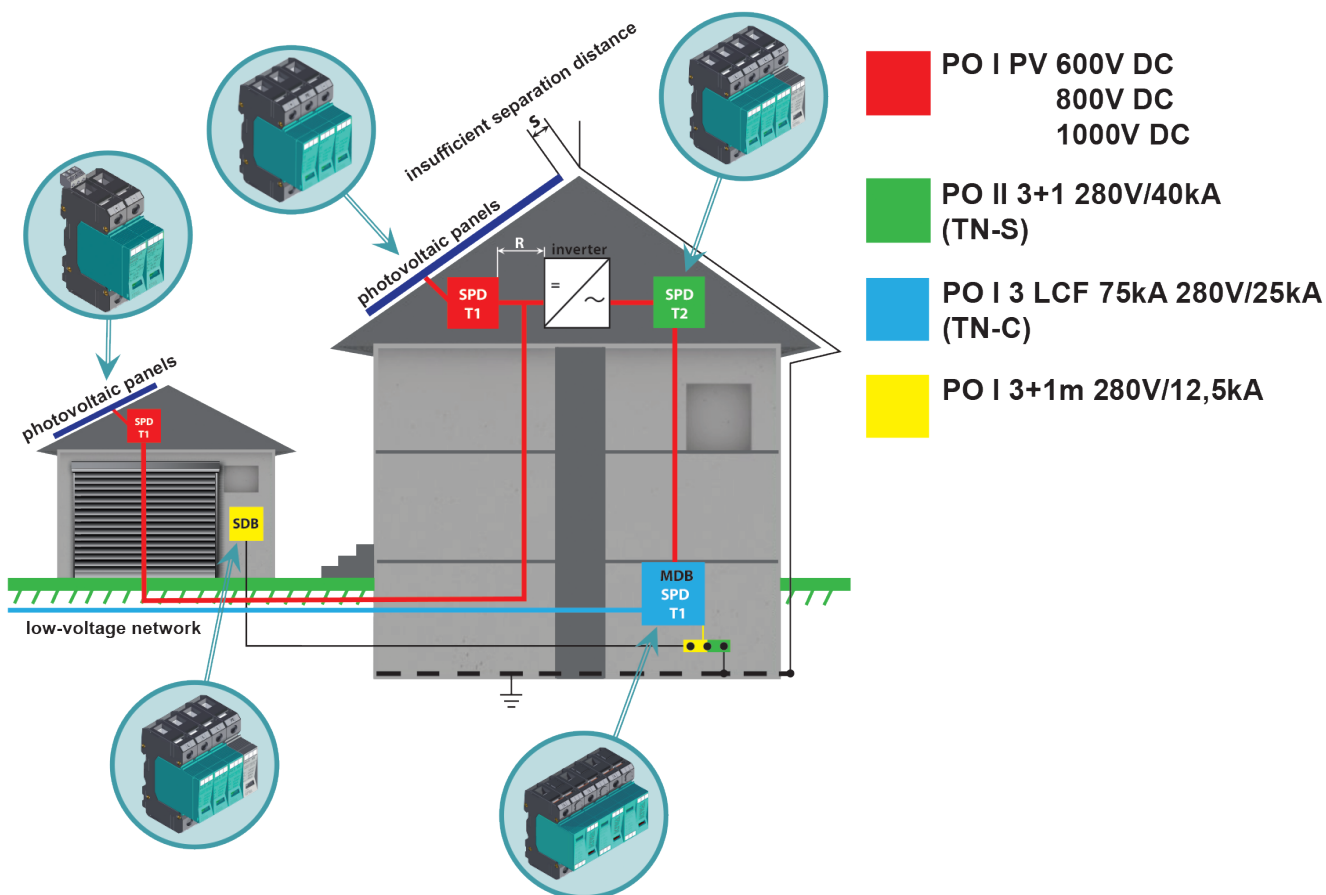


Photovoltaic systems up to 1000V DC.

- for family houses with a garage, where there is **sufficient** separation distance $s > 0,5$ m

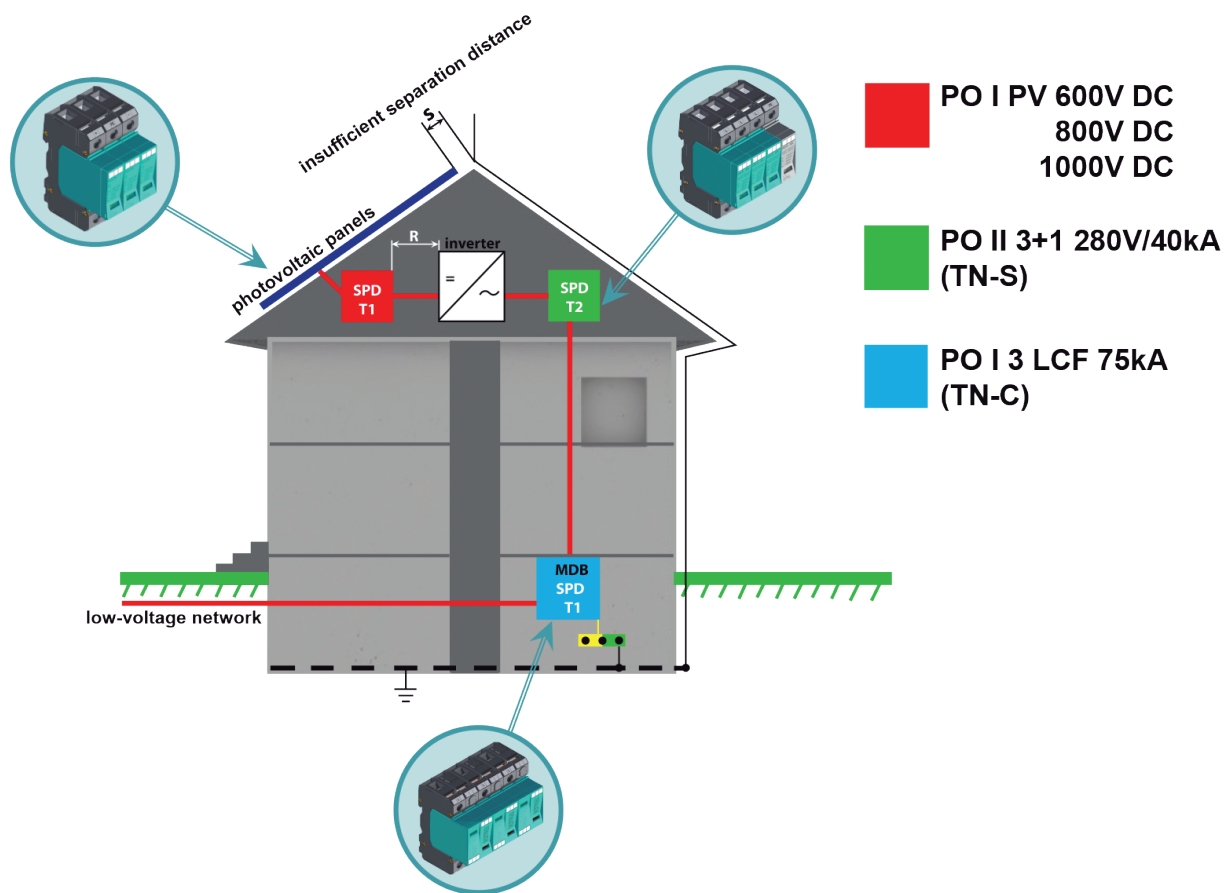


- for family houses with a garage, where there is **insufficient** separation distance $s < 0,5$ m



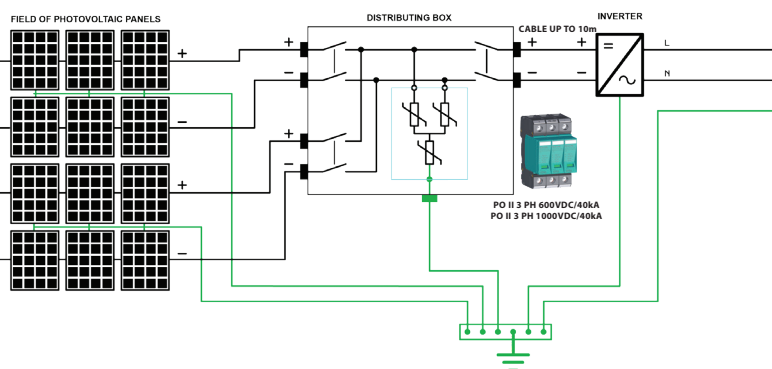
Small photovoltaic systems up to 1000V DC.

- for family houses where there is **insufficient** separation distance $s < 0,5 \text{ m}$

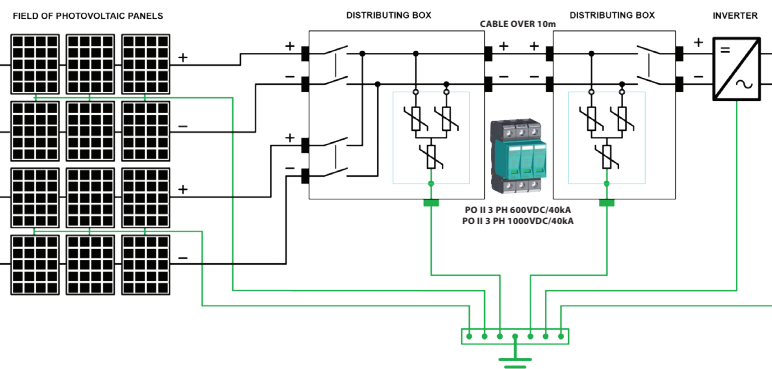


EXAMPLES OF INSTALLATION FOR PHOTOVOLTAIC - DC SIDE

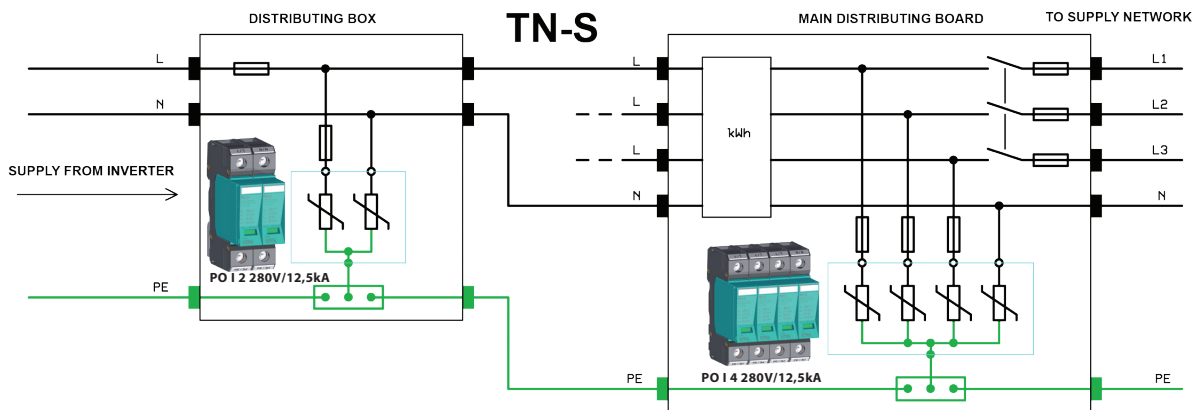
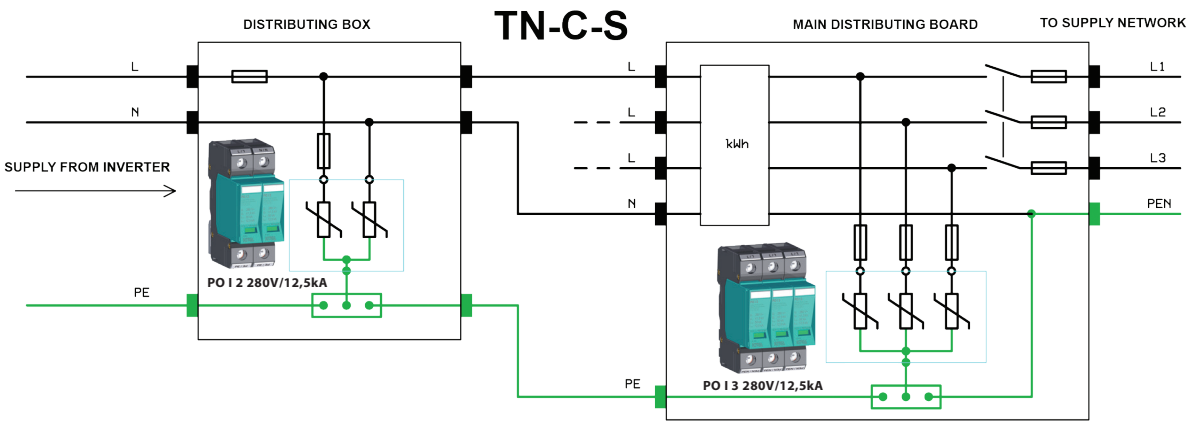
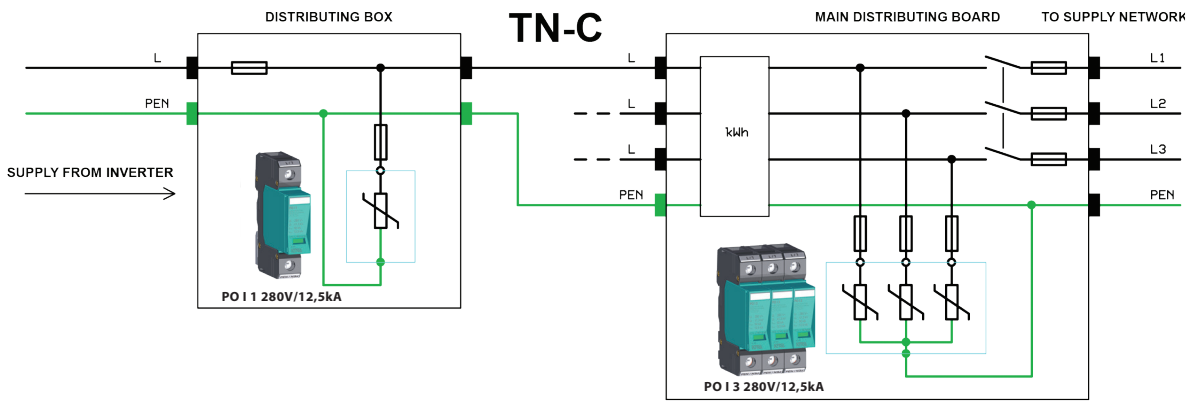
- If the cable distance is R photovoltaic panels to the inverter
- a.) Cable up to 10m,
is being installed 1x PO I PV

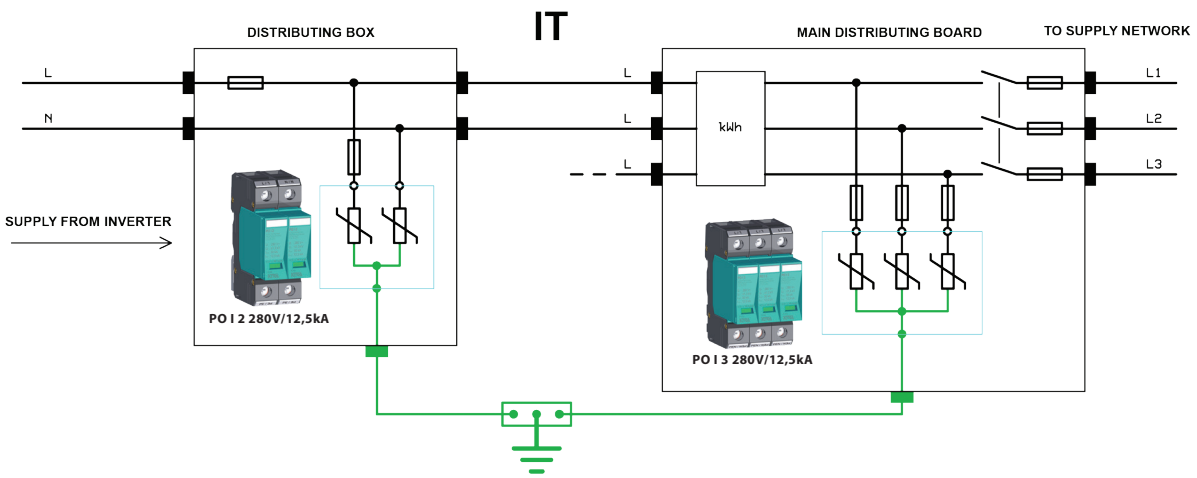
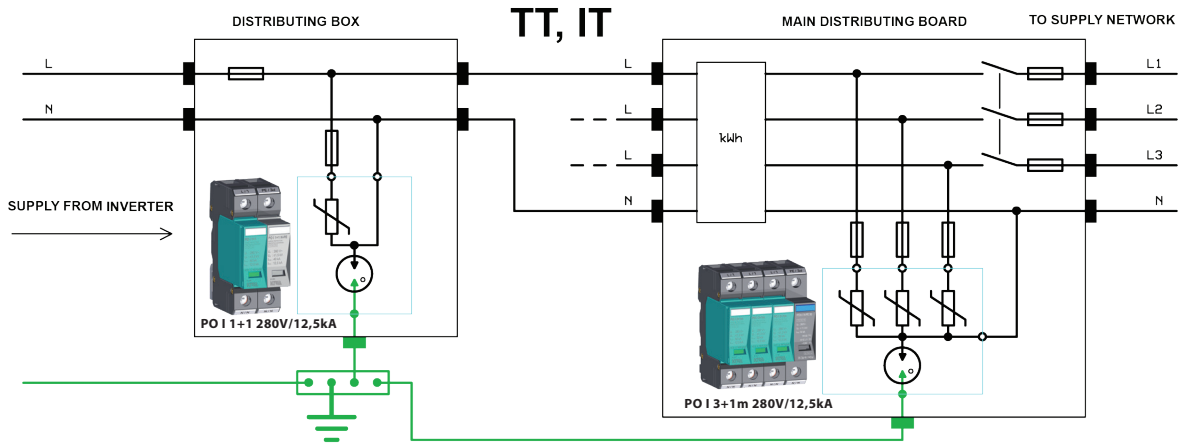


- If the cable distance is R photovoltaic panels to the inverter
- b.) Cable over 10m,
is being installed 2x PO I PV



EXAMPLES OF INSTALLATION FOR PHOTOVOLTAIC - AC SIDE

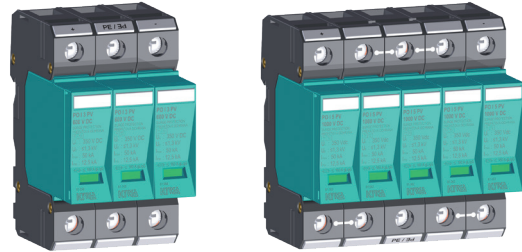
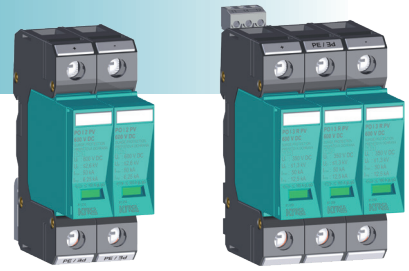




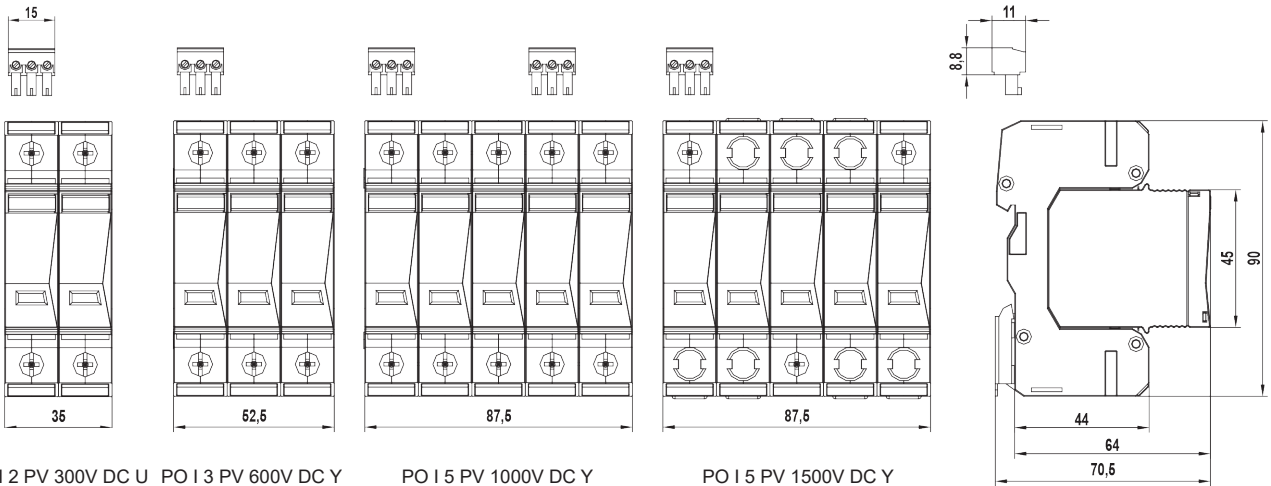
PO I 2 PV 300V DC/12,5kA U
 PO I 2 PV 600V DC/6,25kA U
 PO I 3 PV 600V DC/12,5kA Y
 PO I 3 PV 800V DC/12,5kA Y

PO I 3 PV 1000V DC/12,5kA Y
 PO I 5 PV 1000V DC/12,5kA Y
 PO I 5 PV 1000V DC/12,5kA Y 2-cir.
 PO I 5 PV 1500V DC/12,5kA Y

- For protection of DC photovoltaic systems with operating voltage up to 1500 V DC
- Surge protection with increased resistance against to insulation failure to ground
- Plug-in protective modules
- Optical signalling of operation state
- Remote signalling of operation state (R version)
- Protective modules rotatable by 180° with respect to the base



DIMENSIONS

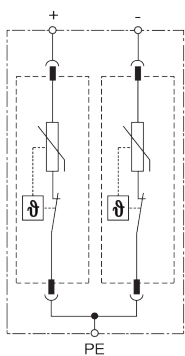


PO I 2 PV 300V DC U PO I 3 PV 600V DC Y
 PO I 2 PV 600V DC U PO I 3 PV 800V DC Y
 PO I 3 PV 1000V DC Y

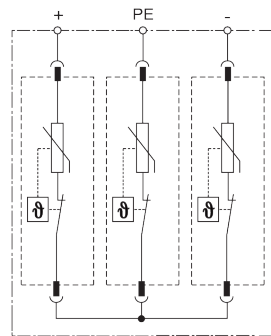
PO I 5 PV 1000V DC Y
 PO I 5 PV 1000V DC Y 2-okr.

PO I 5 PV 1500V DC Y

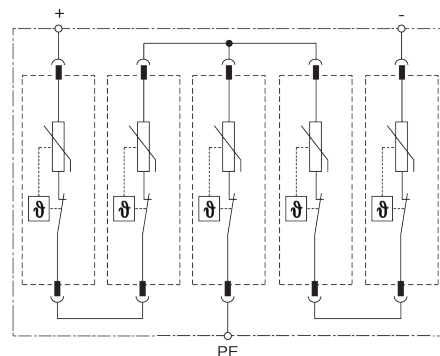
CONNECTION DIAGRAM



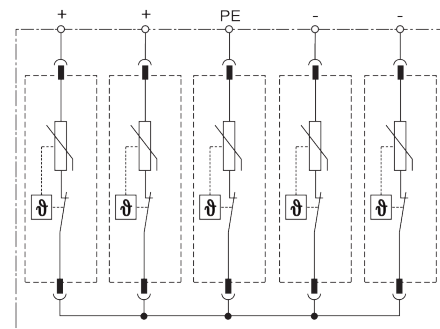
PO I 2 PV 300V DC U
 PO I 2 PV 600V DC U



PO I 3 PV 600V DC Y
 PO I 3 PV 800V DC Y
 PO I 3 PV 1000V DC Y

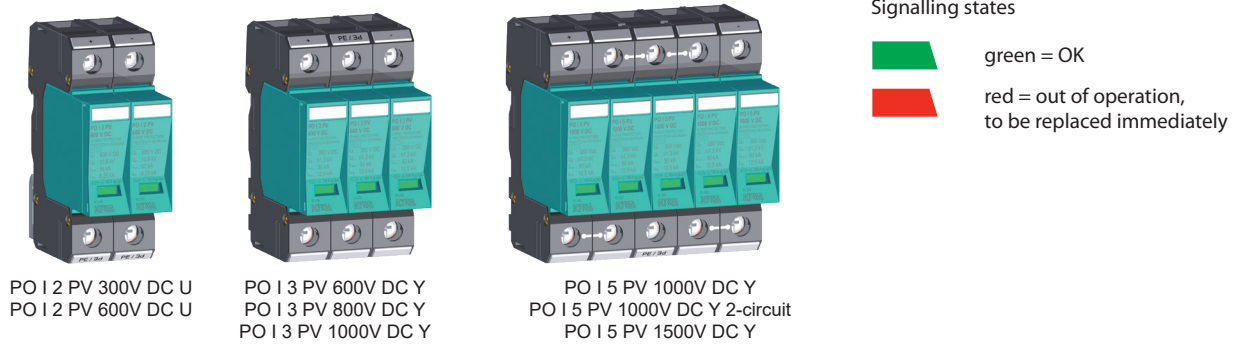


PO I 5 PV 1000V DC Y
 PO I 5 PV 1500V DC Y



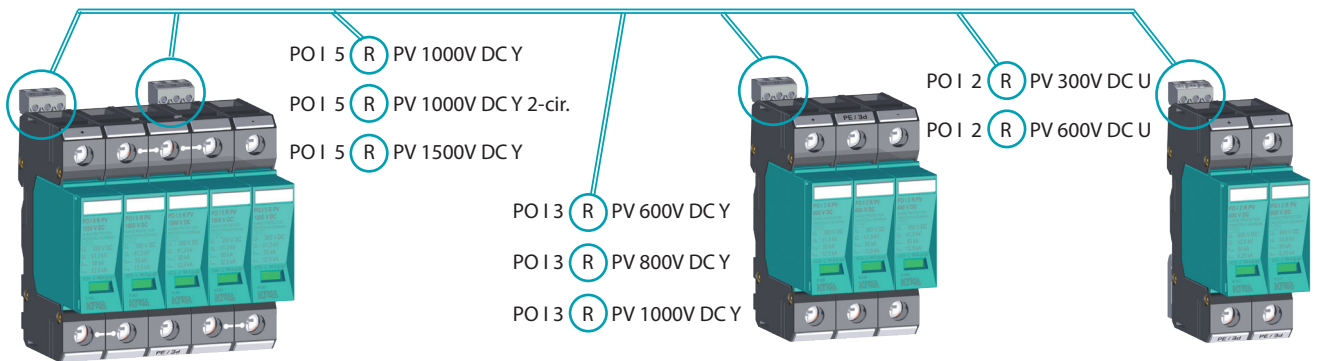
PO I 5 PV 1000V DC Y 2-circuit

BASIC VERSION



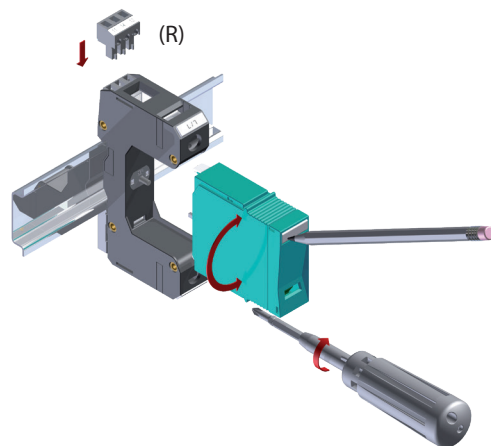
R and PE VERSION

Optional version with remote signalling (R)



INSTALLATION

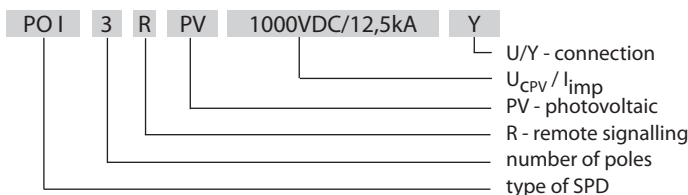
- Installation on DIN rail
- Cable labeling system using Dekafix replaceable strips
- Plug-in varistor can be turned through 180°



TECHNICAL PARAMETERS

TYPE	PO I 2 PV 300V DC U	PO I 2 PV 600V DC U	PO I 3 PV 600V DC Y	PO I 3 PV 800V DC Y	PO I 3 PV 1000V DC Y	PO I 5 PV 1000V DC Y	PO I 5 PV 1000V DC Y 2- cir.	PO I 5 PV 1500V DC Y
Number of poles	2	2	3	3	3	5	5	5
Max. operating voltage U_{CPV}	300 V DC	600 V DC	600 V DC	800 V DC	1000 V DC	1000 V DC	1000 V DC	1500 V DC
Voltage protection level at I_n U_p								
L+/L-	≤2,6 kV	≤5,2 kV	≤3,6 kV	≤3,2 kV	≤4,2 kV	≤5,6 kV	≤4,2 kV	≤5,6 kV
L+L-/PE	≤1,3 kV	≤2,6 kV	≤3,6 kV	≤3,2 kV	≤4,2 kV	≤4,2 kV	≤4,2 kV	≤4,2 kV
Response time t_A								
L+/L-					<25 ns			
L+L-/PE					<25 ns			
Impulse current (10/350) I_{imp}								
L+/L-	12,5 kA	6,25 kA				12,5 kA		
L+L-/PE	12,5 kA	6,25 kA	12,5 kA	6,25 kA	6,25 kA	12,5 kA	6,25 kA	6,25 kA
Nominal discharge current (8/20) I_n						30 kA		
Max. discharge current (8/20) I_{max}						50 kA		
Prospective short-circuit current of a power supply I_p						25 kA _{ef}		
Overcurrent protection gL/gG						≤160 A		
Residual current I_{PE}						<1 μA		
Signalling changeover contact						M3/0.25 Nm, □ max. 0,2 ... 1,5 mm ² , max. 250 V AC/1A		
Status indication of TDD (Thermic Disconnecting Device)						green(OK)/red(OUT)		
Min. ... max. tightening torque						2 ... 3 Nm		
Connecting conductor cross section								
- wire						4 ... 35 mm ²		
- cord						4 ... 25 mm ²		
Operating temperature range						- 40 ... +80 °C		
Degree of protection						IP 20		
Dimensions (mm)/R version (mm)	90 x 64 x 35 / 97 x 64 x 35		90 x 64 x 52,5 / 97 x 64 x 52,5			90 x 64 x 87,5 / 97 x 64 x 87,5		
Mounting on profiled DIN rail						35 x 7,5 mm		
Products comply with norms STN EN 61643-31 IEC 61643-1 VDE 0675-06						type 1 T_1 + type 2 T_2 Class I + Class II Klasse B + Klasse C		

PRODUCT SPECIFICATION



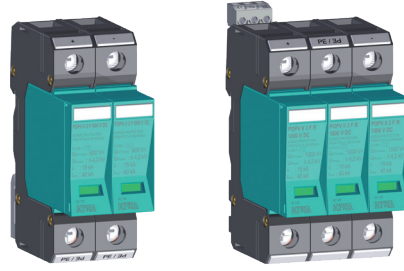
TYPE	Order No.
PO I 2 PV 300V DC/12,5kA U	81.290
PO I 2 R PV 300V DC/12,5kA U	81.291
PO I 0 PV 300V DC/12,5kA U	81.292
PO I 2 PV 600V DC/6,25kA U	81.216
PO I 2 R PV 600V DC/6,25kA U	81.217
PO I 0 PV 600V DC/6,25kA U	81.218
PO I 3 PV 600V DC/12,5kA Y	81.058
PO I 3 R PV 600V DC/12,5kA Y	81.059
PO I 0 PV 600V DC/12,5kA Y	81.071
PO I 3 PV 800V DC/12,5kA Y	81.266
PO I 3 R PV 800V DC/12,5kA Y	81.267
PO I 0 PV 800V DC/12,5kA Y	81.077

TYPE	Order No.
PO I 3 PV 1000V DC/12,5kA Y	81.183
PO I 3 R PV 1000V DC/12,5kA Y	81.184
PO I 0 PV 1000V DC/12,5kA Y	81.185
PO I 5 PV 1000V DC/12,5kA Y	81.062
PO I 5 R PV 1000V DC/12,5kA Y	81.063
PO I 0 PV 1000V DC/12,5kA Y	81.057
PO I 5 PV 1000V DC/12,5kA Y 2-cir.	81.220
PO I 5 R PV 1000V DC/12,5kA Y 2-cir.	81.221
PO I 0 PV 1000V DC/12,5kA Y 2-cir.	81.222
PO I 5 PV 1500V DC/12,5kA Y	81.288
PO I 5 R PV 1500V DC/12,5kA Y	81.289
PO I 0 PV 1500V DC/12,5kA Y	81.293

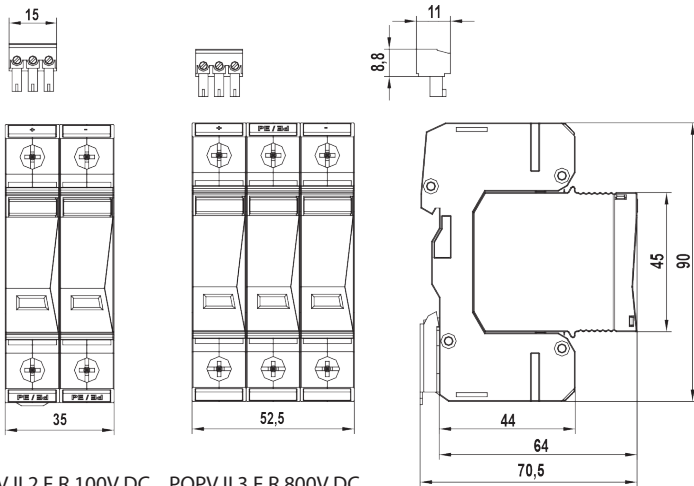
- POPV II 2 F 100V DC
- POPV II 2 F 200V DC
- POPV II 2 F 300V DC
- POPV II 2 F 500V DC
- POPV II 2 F 600V DC
- POPV II 2 F 1000V DC
- POPV II 3 F 800V DC
- POPV II 3 F 1000V DC
- POPV II 3 F 1500V DC

POPV are surge protective devices designed for application in area of photovoltaic systems with DC circuits.

- For protection of DC circuits of photovoltaic systems with operating voltage up to 1500 V DC
- Plug-in protectives modules
- Varistor modules for protection against overvoltage
- Optical signalization of operation state
- Remote signalization of operation state (R version)
- Protective modules rotatable by 180° with respect to the base

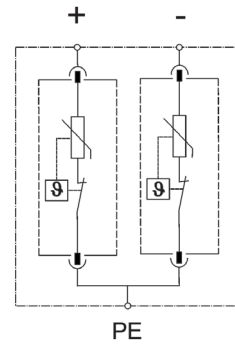


DIMENSIONS



- POPV II 2 F R 100V DC
- POPV II 2 F R 200V DC
- POPV II 2 F R 300V DC
- POPV II 2 F R 500V DC
- POPV II 2 F R 600V DC
- POPV II 2 F R 1000V DC
- POPV II 3 F R 800V DC
- POPV II 3 F R 1000V DC
- POPV II 3 F R 1500V DC

CONNECTION DIAGRAM

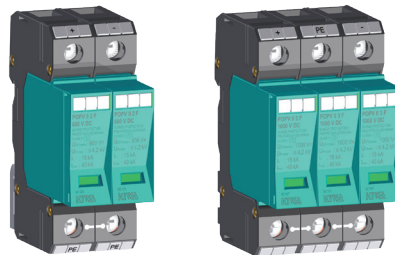


- POPV II 2 F 100V DC
- POPV II 2 F 200V DC
- POPV II 2 F 300V DC
- POPV II 2 F 500V DC
- POPV II 2 F 600V DC

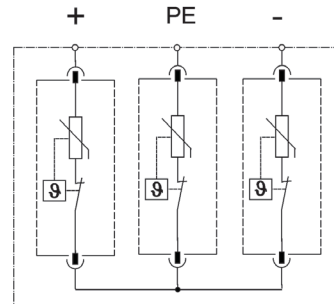
BASIC VERSION

Signalling states

- green = OK
- red = out of operation, to be replaced immediately



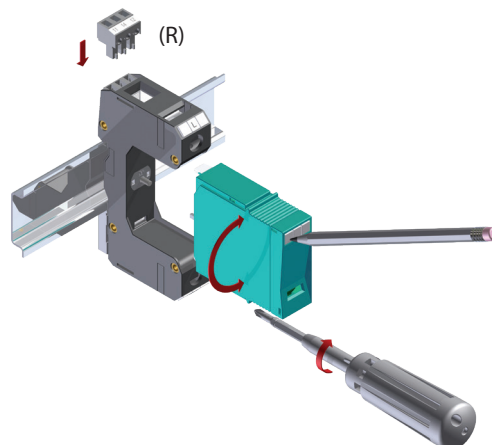
- POPV II 2 F 100V DC
- POPV II 2 F 200V DC
- POPV II 2 F 300V DC
- POPV II 2 F 500V DC
- POPV II 2 F 600V DC
- POPV II 2 F 1000V DC
- POPV II 3 F 800V DC
- POPV II 3 F 1000V DC
- POPV II 3 F 1500V DC



- POPV II 2 F 1000V DC
- POPV II 3 F 800V DC
- POPV II 3 F 1000V DC
- POPV II 3 F 1500V DC

INSTALLATION

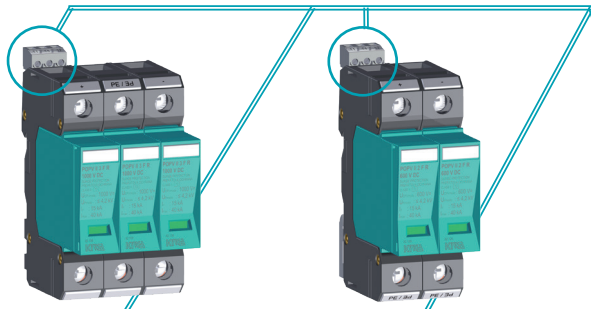
- Installation on DIN rail
- Cable labeling system using Dekafix replaceable strips
- Plug-in varistor can be turned through 180°



R VERSION

PRODUCT SPECIFICATION

Optional version with remote signalling (R)
for the identification of the overvoltage protection state



POPV II 3 F R 800V DC
POPV II 3 F R 1000V DC
POPV II 3 F R 1500V DC

POPV II 2 F R 100V DC
POPV II 2 F R 200V DC
POPV II 2 F R 300V DC

POPV II 2 F R 500V DC
POPV II 2 F R 600V DC
POPV II 2 F R 1000V DC

POPV II 3 F R 1000VDC

U_{CPV}
R - remote signalling
UTE C 61-740-51
number of poles
type of SPD

TECHNICAL PARAMETERS

TYPE	POPV II 2 F 100V DC	POPV II 2 F 200V DC	POPV II 2 F 300V DC	POPV II 2 F 500V DC	POPV II 2 F 600V DC	POPV II 2 F 1000V DC	POPV II 3 F 800V DC	POPV II 3 F 1000V DC	POPV II 3 F 1500V DC
Number of poles	2	2	2	2	2	2	3	3	3
Max. operating voltage U_{CPV}	100 V DC	200 V DC	300 V DC	500 V DC	600 V DC	1000 V DC	800 V DC	1000 V DC	1500 V DC
Voltage protection level at U_p	L+/L-	$\leq 3,0$ kV	$\leq 3,0$ kV	$\leq 3,6$ kV	$\leq 4,2$ kV	$\leq 8,0$ kV	$\leq 3,6$ kV	$\leq 4,2$ kV	$\leq 4,9$ kV
	L+/PE	$\leq 0,45$ kV	$\leq 1,5$ kV	$\leq 1,5$ kV	$\leq 1,8$ kV	$\leq 2,65$ kV	$\leq 4,0$ kV	$\leq 3,6$ kV	$\leq 4,2$ kV
	L+/L-/PE	$\leq 0,45$ kV	$\leq 1,5$ kV	$\leq 1,5$ kV	$\leq 1,8$ kV	$\leq 2,65$ kV	$\leq 4,0$ kV	$\leq 3,6$ kV	$\leq 4,2$ kV
Response time t_A	L+/L-	< 25 ns							
	L+/L-/PE	< 25 ns							
		< 25 ns							
Nominal discharge current (8/20) I_n	15 kA								
Max. discharge current (8/20) I_{max}	40 kA								30 kA
Short-circuit withstand I_{SCWPV}	200 A								
Signalling changeover contact	M3/0.25 Nm, \square max. 0,2 ... 1,5 mm ² , max. 250 V AC/1 A								
Status indication of TDD (Thermic Disconnecting Device)	green (OK)/red(OUT)								
Min. ... max. tightening torque	2 ... 3 Nm								
Connecting conductor cross section	- wire	4 ... 35 mm ²							
	- cord	4 ... 25 mm ²							
Operating temperature range	- 40 ... +80 °C								
Degree of protection	IP 20								
Dimensions (mm)/R version (mm)	90 x 64 x 35 / 97 x 64 x 35						90 x 64 x 52,5 / 97 x 64 x 52,5		
Mounting on profiled DIN rail	35 x 7,5 mm								
Products comply with norms UTE C 61-740-51	Class II								




TYPE	Order No.	TYPE	Order No.	TYPE	Order No.
POPV II 2 F 100V DC	82.186	POPV II 2 F 500V DC	82.180	POPV II 3 F 800V DC	82.166
POPV II 2 F R 100V DC	82.187	POPV II 2 F R 500V DC	82.181	POPV II 3 F R 800V DC	82.167
POPV II 0 F 100V DC	82.188	POPV II 0 F 500V DC	82.182	POPV II 0 F 800V DC	82.170
POPV II 2 F 200V DC	82.184	POPV II 2 F 600V DC	82.125	POPV II 3 F 1000V DC	82.107
POPV II 2 F R 200V DC	82.185	POPV II 2 F R 600V DC	82.126	POPV II 3 F R 1000V DC	82.108
POPV II 0 F 200V DC	82.189	POPV II 0 F 600V DC	82.127	POPV II 0 F 1000V DC	82.109
POPV II 2 F 300V DC	82.168	POPV II 2 F 1000V DC	82.174	POPV II 3 F 1500V DC	82.172
POPV II 2 F R 300V DC	82.169	POPV II 2 F R 1000V DC	82.175	POPV II 3 F R 1500V DC	82.173
POPV II 0 F 300V DC	82.171	POPV II 0 F 1000V DC	82.176	POPV II 0 F 1500V DC	82.177

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 wide range of application areas starting with large investment complexes and ending with measurement and telecommunications networks.



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