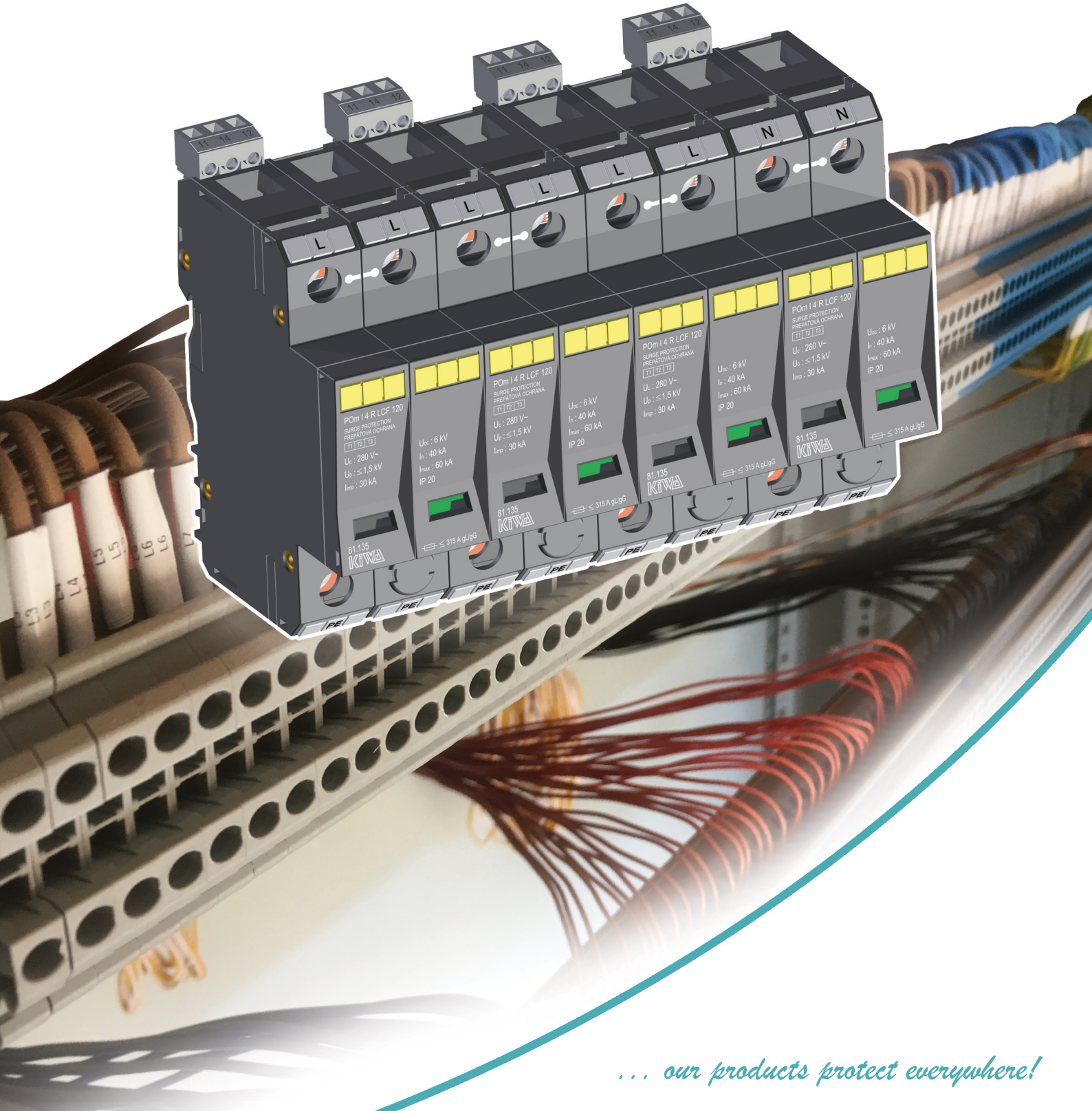
surge protective devices

KIWA AG PARAFUDUR ILE GÜVENLI BÖLGEDESINIZ

CATALOGUE 2017 / 2018

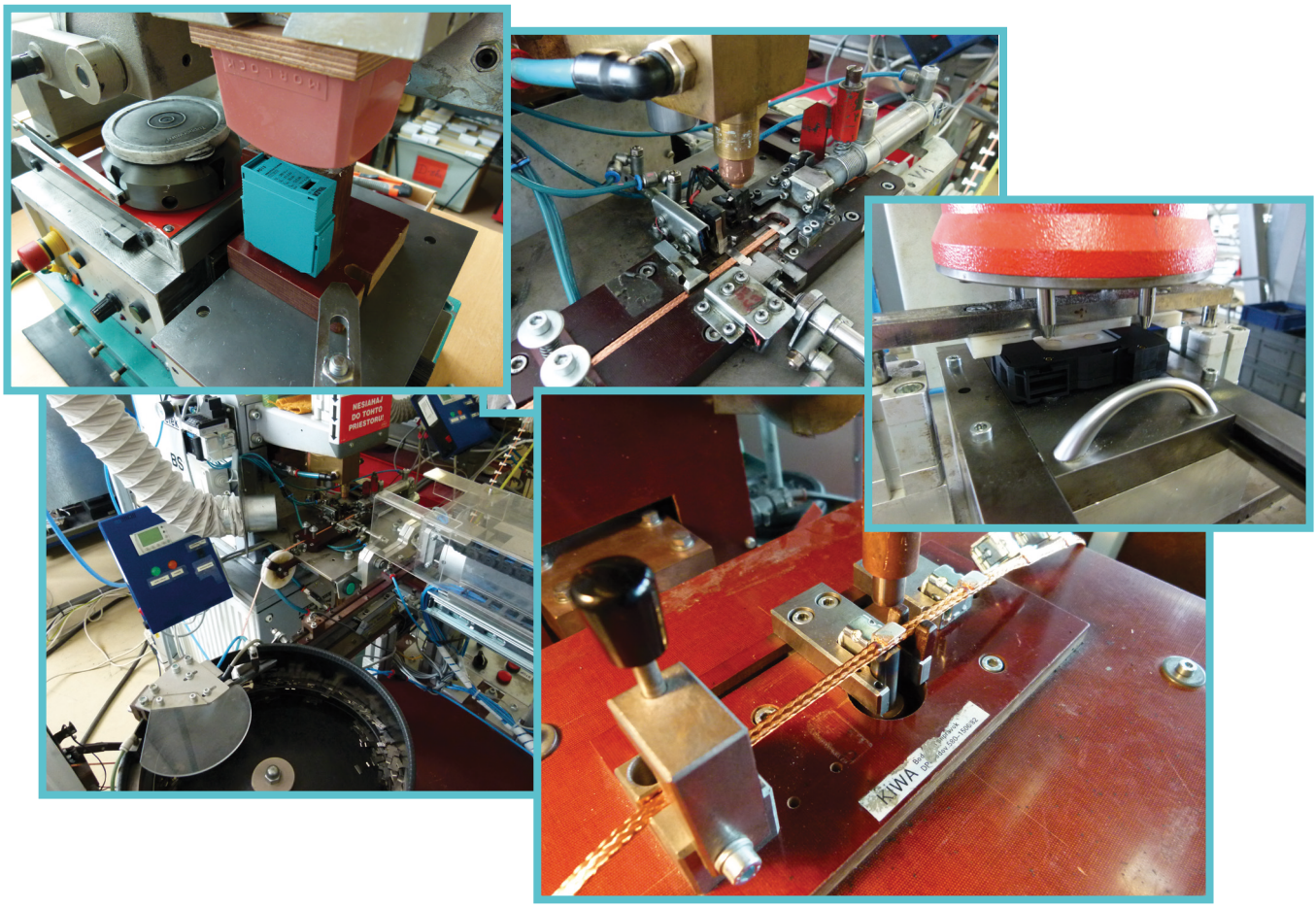


... our products protect everywhere!

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.

WHAT IS OVERVOLTAGE ?

Impulse overvoltage

Massive increase of electronics in all areas of human beings is connected with a necessity to protect electronic equipment from failure state occurance.

In the past reasons of failures were searched for only in the individual equipment, nowadays this access is extended also to considering operating conditions of equipment from the view of overvoltage appearance in the given surroundings. Damages caused by impulse overvoltage are of higher order when comparing with the past, e.g. costs for insurance events caused by overvoltage in foreign insurance companies according to the statistics are ten of percents of the overall costs of insurance events remittance.

Sources of overvoltage occurances are mainly atmospheric discharges, switch processes in distribution networks and switch processes of power components and equipment in technological processes. Atmospheric overvoltage is characteristic by high released energy which can threat directly (lightning current) or by overvoltage inducted at indirect lightning hits. Overvoltage frequency due to atmospheric discharges is given mainly by numbers of stormy days which achieves on average 25 a year in our country.

Switch processes in distribution networks generate overvoltage impulses which are often transfered through capacitance of transformers from the high-voltage into the low-voltage networks. Frequency of their occurance is multiple times higher than in case of atmospheric discharge. Technological overvoltage origins in on/off switching mainly inductive and capacitive loads. The frequency of their occurance is multiple times higher in comparison with previous kinds of overvoltages.

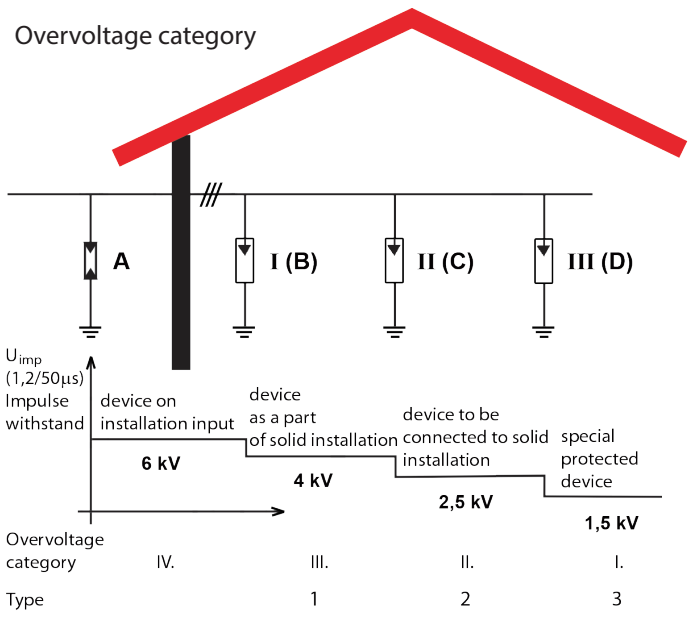
Overvoltage can be propagated out of its source in more ways. The lowest attenuation for its propagation represents the galvanic way created by power and telecomunication networks. Overvoltage propagation form the source to the place of interference can be reached also via capacity and inductive coupling or by electromagnetic induction. Overvoltage penetration into electric distributions can be also caused by high increase of basement earthing potential due to lightning hit into the object. Withstand of electric appliances to overvoltage comprises a part of its electromagnetic compatibility, it means an ability of electric appliance to work reliably in interfering electromagnetic surroundings. That is why the topic of overvoltage and overvoltage protection has been given more and more attention.

The overvoltage protection principle

Overvoltage protection consists of set of technical precautions which eliminate overvoltage to the value acceptable in the given point of electricity distribution. These precautions include mainly concept of interconnections of all non-live parts and interconnection of all live parts by overvoltage conductors to equal potential. SPDs have a very high resistance at nominal voltage thus they are an insulant. When increasing the voltage over their nominal voltage the resistance of SPDs starts to decrease very quickly and so they galvanicaly connect live parts with zero equipotential ground bus bar. Increased current flowing through SPD cause limitation of voltage increase on protected circuit. Thus the voltage on protected line does not exceed the level defined by standard and this way any damage on appliance or distribution system is prevented.

Basic protection conditions against the impulse overvoltage caused by direct or indirect lightning hit are presented in the standard IEC 61024-1 which defines rules for outdoor and indoor protection against the lightning. EU standard EN 62305 about rules for building protection against the lightning sets only conditions for outdoor protection against lightning. Requirements for indoor protection with zone concepts of lightning protection are defined in IEC 1312-1.

Minimum required withstand against the impulse overvoltage is defined by I EN 60664-1:2004-07, IEC 664, in terms of overvoltage category I to IV and it sets the possibility of transmission from one overvoltage category into a lower category by using the SPDs.



Standard IEC 61643-1 presents a distribution of SPD-s into classes of requirements I - B, II - C and III - D.

All KIWA SPD-s comply the most recent requirements of standard EN 61643-11.

SPD Type 1 (class I, B) is intended for overvoltage category III according to the EN 33 0420, where the maximum overvoltage 4 kV is set by insulation coordination for the network 230/400V. This SPD serves for equalizing of potentials at lightning strike and it is connected to installation input in the main distributor.

SPD Type 2 (class II, C) is intended for overvoltage category II where the maximum overvoltage 2,5 kV is set by insulation coordination for the network 230/400V. This SPD is intended to divert the energy of overvoltage impulses in electric distributions and it is installed mainly into sub distribution boards. It is also possible to install it into the main distributor together with SPD class I, but it is necessary insert between this stages an impact decoupling choke.

SPD Type 3 (class III, D) is intended for overvoltage category I, where the maximum overvoltage 1,5 kV is set by insulation coordination for the network 230/400V. This SPD is intended to divert the energy of overvoltage impulse at the end of plug circuit or distributiors of electric machines equipment. In spite of the fact that presented standards require a complex installation of SPDs in step configuration of classes I (B), II (C), III (D), the individually installed SPD of class III is also able to divert a considerable part of overvoltage applied to the supply network.

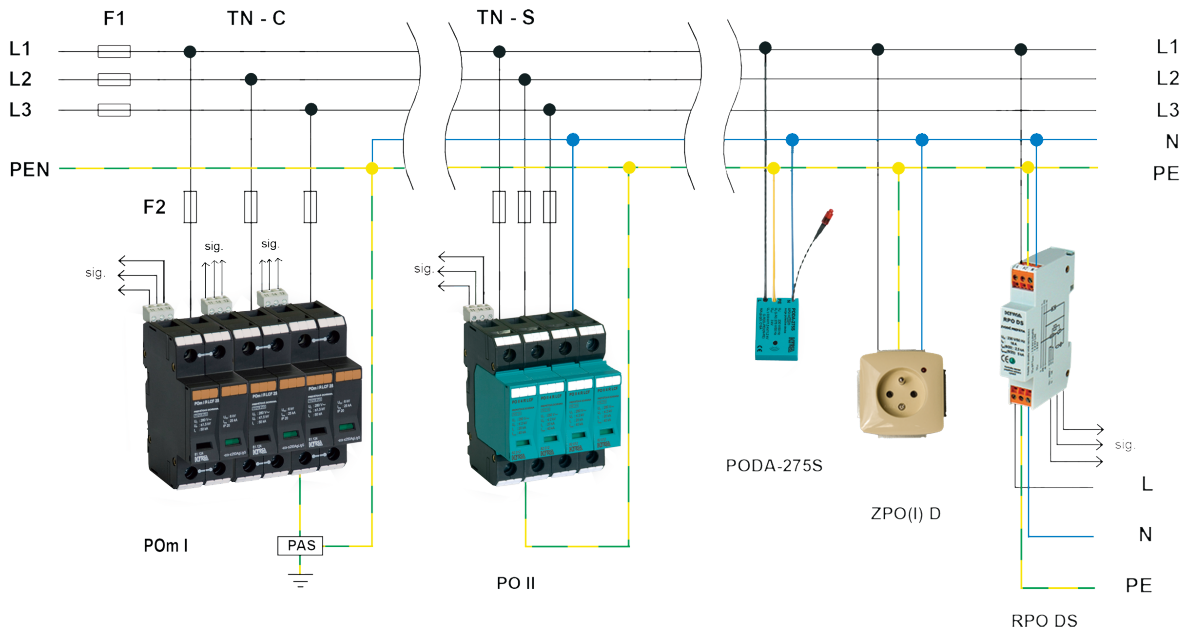
Operation security is also important at individual usage of SPD class III, which is given mainly by SPD design.

SPD INSTALLATION

Requirements for choice and way of SPD installation in electric appliaces of building is described in the regulation IEC 332000 Electric installations of buildings – protective devices against overvoltage

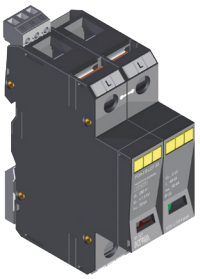
and IEC 60364-53 Electric installation of buildings part 5-53 Choice and assembly of electric appliances, section 534 Protection against overvoltage appliances. In this regulations is a description of layout and connection of SPDs for individual types of networks. The basic parameters of SPDs are there specified for individual areas of applications. These standards present also a need of energy coordination of individual levels in the overvoltage protection system ensuring that these levels are properly coordinated. The norm sets rules of insertion of impedance between individual levels of overvoltage protection which can be realized either by own impedance of sufficiently long line between individual levels or by insertion of decuppling chokes. Size of sufficient electric cable length is given by individual types of SPDs. In case of SPDs class I based on lightning arrester and SPD class II based on varistor is sufficient from the view of energy coordination security a line of the length approximately 15 m. In case of SPDs based on varistor e.g. PO I and PO II of KIWA assortment there was experimentaly found the same reaction period of both levels, thus the separation is sufficient at usage of cable approximately 1,5 m long. Impedance by integration of such a cable fully coordinates energy distribution between individual varistor levels even at most negative tolerance deviations of individual levels.

For details see: „APPLICATION HANDBOOK“



OVERVIEW OF SPD KIWA

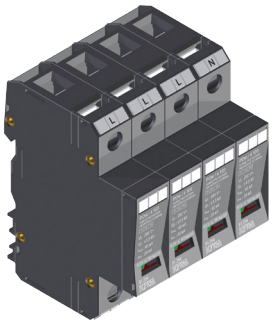
POm I LCF - SPD Type 1+2+3 (B+C+D) Page 7 - 12



POm I LCF - are used for protection of mains and appliances against the effects of overvoltage wave caused by a close, direct or indirect lightning hit. Designed as one monoblock with varistor and gas filled spark gap connected in series which ensures a complete separation of L->N, N->PE, with zero residual currents. The units are manufactured in versions with or without remote signaling system. When installing, modules can be clipped to DIN rails 35 mm.

U_n = 230 V AC
I_{imp} = 12,5 kA/pole, 25 kA/pole, 30 kA/pole, 38 kA/pole, 50 kA/pole, 100 kA/pole — TN-C, TN-S, IT, TT

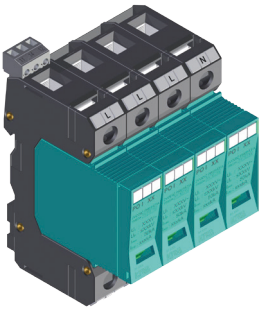
POm I - SPD Type 1+2+3 (B+C+D) Page 13 - 14



Used for protection of mains and appliances against the effects of overvoltage wave caused by a close, direct or indirect lightning hit. Designed as one monoblock. The units are manufactured in versions with or without remote signaling system. When installing, modules can be clipped to DIN rails 35 mm.

U_n = 230 V AC
I_{imp} = 25 kA/pole — TN-C, TN-S, IT, TT

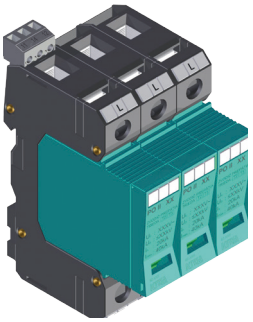
PO I - SPD Type 1+2+3 (B+C+D) Page 15 - 20



PO I - are used to equalize potentials at striking of lightning. They are installed at the input of outer conductors to the main switching cabinet. These modules incorporate replaceable plug-in varistors and are also manufactured in versions with or without remote signaling system. When installing, modules can be clipped to DIN rails 35 mm.

U_n = 230 V AC
I_{imp} = 7 kA/pole, 12,5 kA/pole — TN-C, TN-S, IT, TT

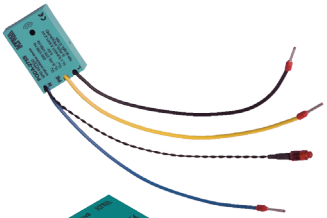
PO II - SPD Type 2+3 (C+D) Page 21 - 26



PO II - are used to divert energy of overvoltage impulses in power distribution systems of objects. These modules are usually installed in subdistribution boards. The incorporated plug-in varistor is coded according to voltage. The units are manufactured in versions with or without remote signaling system. When installing, modules can be clipped to DIN rails 35 mm.

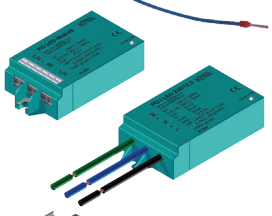
U_n = 60, 120, 230, 385, 470, 750V AC
I_{max} = 40 kA/pole — TN-C, TN-S, IT, TT

SPD Type 3 (D) Page 27 - 35

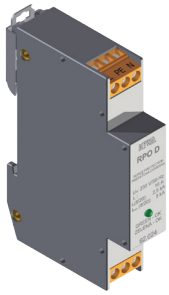


They are used as protection of end devices against surge impulses in electrical distributions. A common feature of SPDs type 3 is an original design with thermal disconnecting device, which is at once also a fire safety element. It is recommended to install it as close as possible to the protected device.

1. POD-275 and POD S - are used as a supplementary protection of already installed power sockets, installing housings, canals or directly into end devices and instruments.



2. PO LED
Usage for LED lights as 2nd and 3rd level (T2 medium and T3 fine protection) in 3-level overvoltage protection concept. Protection against the transverse and longitudinal overvoltage (L/N, L/PE, N/PE). Optical or acoustical signalization of operational state.



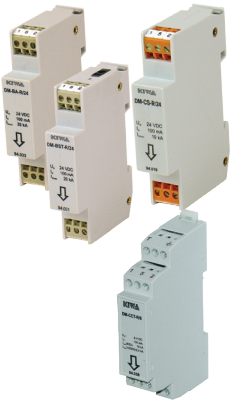
3. RPO D
RPO D - all versions are designed for installation on DIN rail inside the distributor of the end device
- models (R) are fitted with remote signaling
- models (F) are fitted with HF filter to eliminate interference coming from distribution network

4. ZPO D socket overvoltage protection devices are installed directly in standard sockets as its integral part:
- manufactured in variant with optical indication of correct function (ZPO D) of overvoltage protection or with indication of defect (ZPOI D)
- in case of varistor overloading the protective unit is disconnected while socket remains functional but without protection
- simple installation

5. ZPA D are characterized by simple installation i.e. plugging into the standard mains socket. Manufactured in variants ZPA D, ZPA DFAX, ZPA DTV, ZPA DEth.

TN-C, TN-S

Overvoltage protection of communication lines for instrumentation and control Page 36 - 41



These modules are used for protection of data entry in equipments of instrumentation and control systems. Individual types of overvoltage protections are designed for various application areas. Surge protective devices type DM are used for protection

of measuring and control part of equipment entry, while those of type DN are used for protection of supply part of equipment output. These modules are manufactured in variants R (for distribution boards), M (modular) and P (integrated).

Application area:

BS, BST, BA, BAT – protection of instrumentation and control equipment with analog signal transfer (sensors 0/4 – 20 mA, binary signals). Protection of supply lines AC, DC. Frequency limit 100 kHz.

CS, CC - protection of lines with analog or digital signal transfer. Cutoff frequency 3MHz. Transfer data rate up to 1.5 Mbit/s.

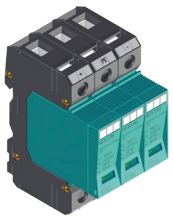
U_n = 8, 12, 16, 24, 48 V DC

Overvoltage protection for Ethernet data networks Page 42

The data network overvoltage protection DME is designed to protect LAN 100BaseT (CAT5). These units are manufactured in modular variant with protection of 2 pairs of wires.

U_n = 5 V DC
Transfer data rate = 100 Mbit/s

Overvoltage protection for DC circuits of photovoltaic systems Page 43 - 56



For protection of DC circuits of photovoltaic systems. These modules incorporate replaceable plug-in varistor and are also manufactured in versions with or without remote signaling system. When installing, modules can be clipped to DIN rails 35 mm.

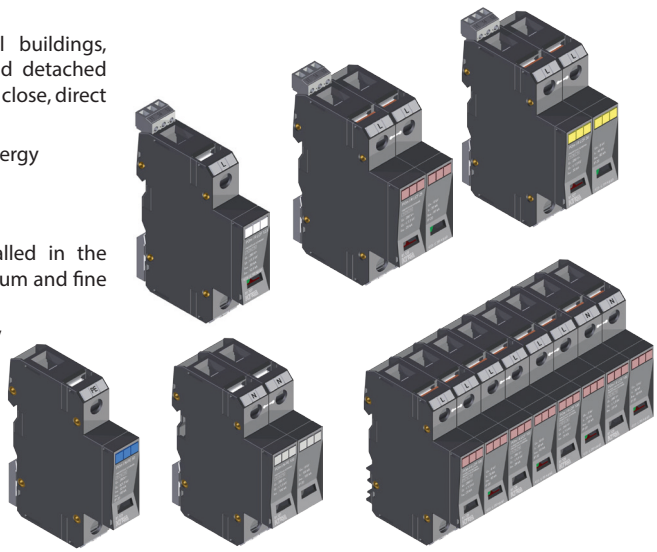
U_{CPV} = to 1000 V DC

Fault signalization module Page 57

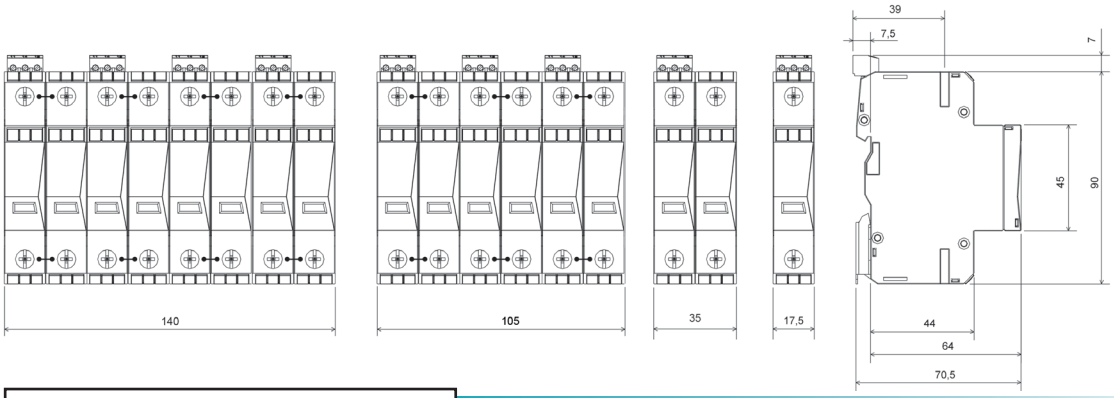
Fault signalization modules MSP-24 and MSP-230 are designed for sound and light signalling of fault condition of surge protectors.

POm I LCF

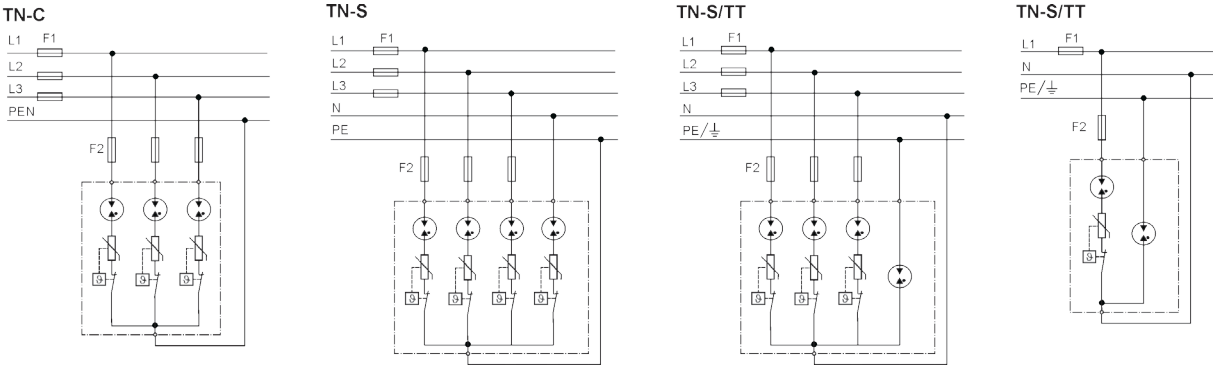
- For protection of mains and appliances in industrial buildings, administration buildings, buildings of civil amenities and detached houses against the effects of overvoltage wave caused by a close, direct or indirect lightning hit
- It decreases overvoltage and restricts overvoltage wave energy
- Installation: 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 power varistors MOV and lightning arrester
- Zero leaking current (LCF version)
- Zero follow current
- Optical and remote signalization of operation state
- Multifunctional terminals for conductors
- Possibility of monoblock connection by bus bars



DIMENSIONS



CONNECTION DIAGRAM



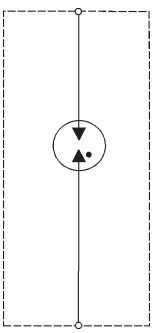
POm I 3 LCF 35,3
POm I 3 LCF 75
POm I 3 LCF 90

POm I 4 LCF 50
POm I 4 LCF 100
POm I 4 LCF 120

POm I 3+1 LCF 50
POm I 3+1 LCF 100

POm I 1+1 LCF 50

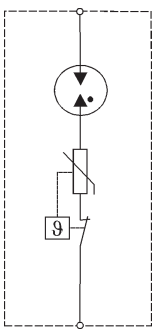
N-PE VERSION



POm I N-PE 50
I_{total} = 50 kA

POm I N-PE 100
I_{total} = 100 kA

LCF VERSION



- LCF version is version with zero leaking current and zero follow current
- Possibility of application in front of electricity meter** as well as after current breaker (**valid only with the agreement of appropriate electricity supplier)
- Varistor is connected in series with gas filled spark gap

Signalling states

green = OK

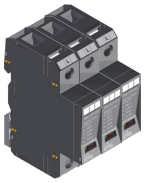
red = out of operation, to be replaced immediately

DELIVERY AND ASSEMBLY INSTRUCTION

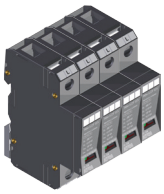
Completed from individual poles – using individual poles taken from store during the assembly process according to needs

Delivered and assembled as one unit – simple installation

POm I LCF 12,5
I_{imp} = 12,5 kA

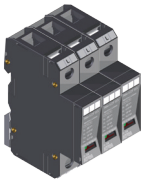


3x POm I LCF 12,5
I_{total} = 37,5 kA

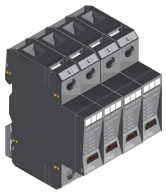


4x POm I LCF 12,5
I_{total} = 50 kA

3x POm I LCF 12,5
1x POm I N-PE 50
I_{total} = 50 kA



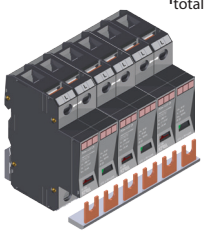
POm I 3 LCF 37,5
I_{total} = 37,5 kA



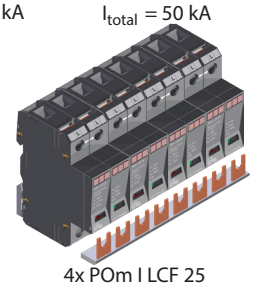
POm I 4 LCF 50
I_{total} = 50 kA

POm I 3+1 LCF 50
I_{total} = 50 kA

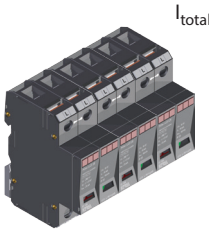
POm I LCF 25
I_{imp} = 25 kA



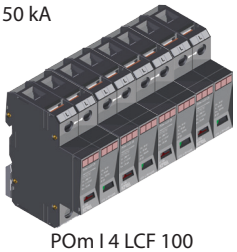
3x POm I LCF 25
I_{total} = 75 kA



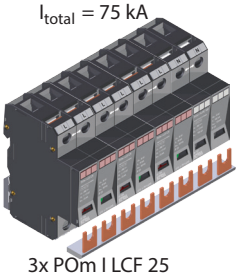
4x POm I LCF 25
I_{total} = 100 kA



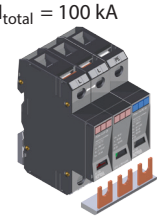
POm I 3 LCF 75
I_{total} = 75 kA



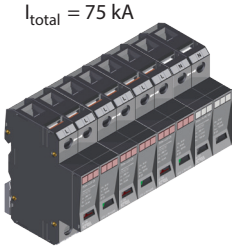
POm I 4 LCF 100
I_{total} = 100 kA



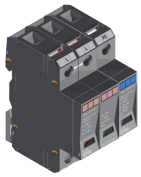
3x POm I LCF 25
1x POm I N-PE 100
I_{total} = 100 kA



1x POm I LCF 25
1x POm I N-PE 50
I_{total} = 50 kA

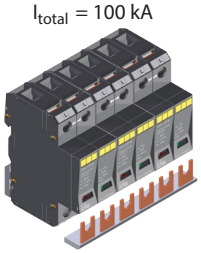


POm I 3+1 LCF 100/25
I_{total} = 100 kA

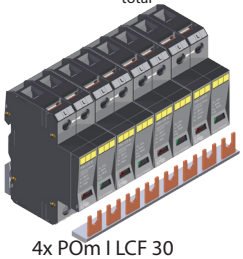


POm I 1+1 LCF 50/25
I_{total} = 50 kA

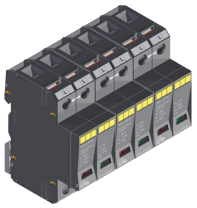
POm I LCF 30
I_{imp} = 30 kA



3x POm I LCF 30
I_{total} = 90 kA

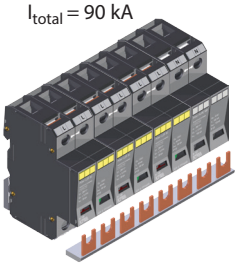


4x POm I LCF 30
I_{total} = 120 kA

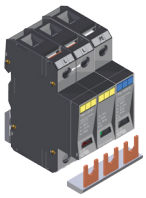


POm I 3 LCF 90
I_{total} = 90 kA

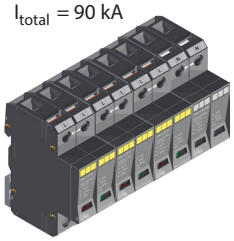
POm I 4 LCF 120
I_{total} = 120 kA



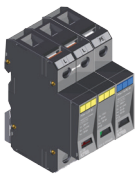
3x POm I LCF 30
1x POm I N-PE 100
I_{total} = 100 kA



1x POm I LCF 30
1x POm I N-PE 50
I_{total} = 50 kA



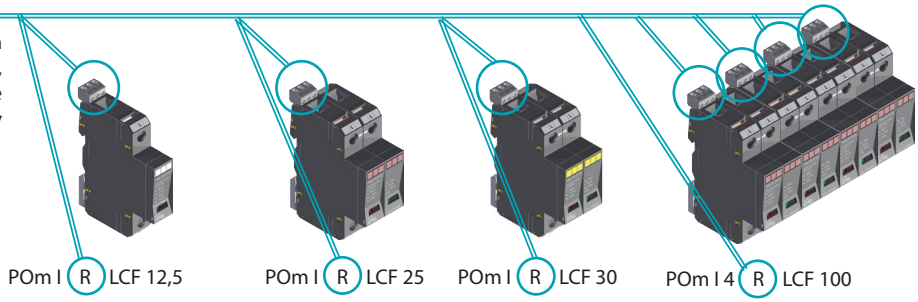
POm I 3+1 LCF 100/30
I_{total} = 100 kA



POm I 1+1 LCF 50/30
I_{total} = 50 kA

R VERSION

Each product's modification containing varistor module, can be supplied with remote signalling system to identify the state of SPD.



TECHNICAL PARAMETERS

KIWA TYPE		POm I				
		N-PE		L-N		
		50	100	LCF 12,5	LCF 25	LCF 30
Number of poles		1	1	1	1	1
Nominal voltage	U_n	230 V~	230 V~	230 V~	230 V~	230 V~
Max. operating voltage T1 T2 T3	U_c	260 V~	260 V~	280 V~	280 V~	280 V~
Voltage protection level T1 T2 T3	U_p	≤1,5 kV	≤1,5 kV	≤1,5 kV	≤1,5 kV	≤1,5 kV
Response time	t_A	<100 ns	<100 ns	<100 ns	<100 ns	<100 ns
Impulse current (10/350)	I_{imp}	50 kA	100 kA	12,5 kA	25 kA	30 kA
Open circuit voltage T3	U_{oc}	10 kV	6 kV	6 kV	6 kV	6 kV
Nom. discharge current (8/20) T1 T2	I_n	60 kA	100 kA	30 kA	40 kA	40 kA
Max. discharge current (8/20)	I_{max}	60 kA	100 kA	50 kA	60 kA	60 kA
Prospective short-circuit current of a power supply	I_p			25 kA_{ef}	25 kA_{ef}	25 kA_{ef}
Overcurrent protection gL/gG		-	-	≤160 A	≤250 A	≤315 A
Temporary overvoltage	U_{TOV}	-	-	335 V AC		
Residual current	I_{PE}	<1 µA		<1 µA		
Follow current	I_f	100 A		-		
Signalling changeover contact		-	-	M3/0.25 Nm, ▫0,2 ... 1,5 mm^2, max. 250 V~/1A		
Status indication of TDD (Thermic Disconnecting Device)		-		green (OK) / red (OUT)		
Status indication of EWS		-		-		
Min. ... max. tightening torque		2 ... 3 Nm		2 ... 3 Nm		
Connecting conductor cross section: - wire		4 ... 35 mm^2		4 ... 35 mm^2		
- cord		4 ... 25 mm^2		4 ... 25 mm^2		
Operating temperature range		- 40 ... +70 °C		- 40 ... +70 °C		
Degree of protection		IP 20		IP 20		
Colour		black, RAL 9011		black, RAL 9011		
Dimensions		97 x 64 x 17,5 mm	97 x 64 x 35 mm	97 x 64 x 17,5 mm	97 x 64 x 35 mm	
Mounting on profiled DIN rail		35 x 7,5 mm		35 x 7,5 mm		
Products comply with norms 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		type 1 T1 + type2 T2 + type 3 T3 Class I + Class II + Class III Klasse B + Klasse C + Klasse D		

PRODUCT SPECIFICATION

POm I | | R | LCF | 12,5 | 280V/12,5kA

- 280V/12,5kA — U_c / I_{imp}
- 12,5 — I_{total} - common current I_{imp}
- LCF — LCF, N-PE version
- R — R - remote signalling
- (blank) — number of poles
- POm I — type SPD

Busbars	Order number
2 pol - QB 18 - 2	91.601
3 pol - QB 18 - 3	91.603
4 pol - QB 18 - 4	91.605
6 pol - QB 18 - 6	91.610
8 pol - QB 18 - 8	91.609

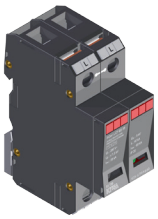
TYPE	Order number
POm I LCF 12,5	81.104
POm I R LCF 12,5	81.107
POm I 3 LCF 37,5	81.136
POm I 3 R LCF 37,5	81.137
POm I 4 LCF 50	81.138
POm I 4 R LCF 50	81.139
POm I 3+1 LCF 50	81.140
POm I 3+1 R LCF 50	81.141
POm I N-PE 50	81.101
POm I N-PE 100	81.121

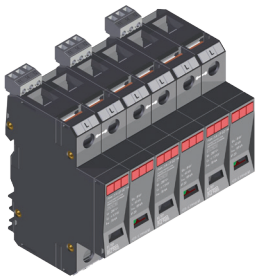
TYPE	Order number
POm I LCF 25	81.124
POm I R LCF 25	81.125
POm I 3 LCF 75	81.130
POm I 3 R LCF 75	81.131
POm I 4 LCF 100	81.128
POm I 4 R LCF 100	81.129
POm I 3+1 LCF 100/25	81.142
POm I 3+1 R LCF 100/25	81.143
POm I 1+1 LCF 50/25	81.150
POm I 1+1 R LCF 50/25	81.151

TYPE	Order number
POm I LCF 30	81.126
POm I R LCF 30	81.127
POm I 3 LCF 90	81.132
POm I 3 R LCF 90	81.133
POm I 4 LCF 120	81.134
POm I 4 R LCF 120	81.135
POm I 1+1 LCF 50/30	81.144
POm I 1+1 R LCF 50/30	81.145
POm I 3+1 LCF 100/30	81.152
POm I 3+1 R LCF 100/30	81.153

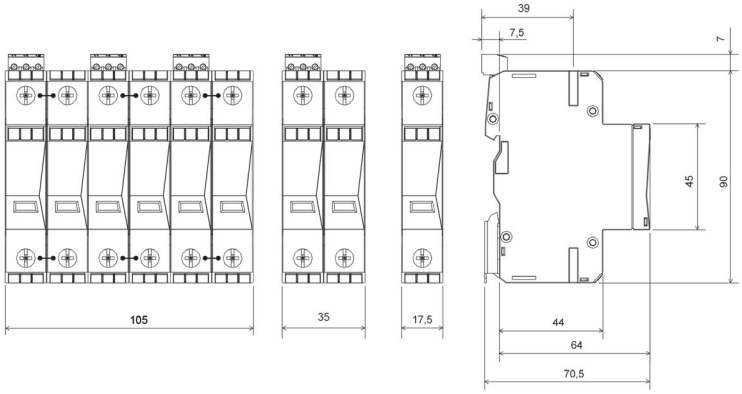
POm I LCF BD

- For protection of mains and appliances in administration buildings, buildings of civil amenities and detached houses against 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 power varistors MOV and lightning arrester
- Zero leaking current (LCF version)
- Zero follow current
- Optical and remote signalization of operation state
- Multifunctional terminals for conductors
- Possibility of monoblock connection by bus bars

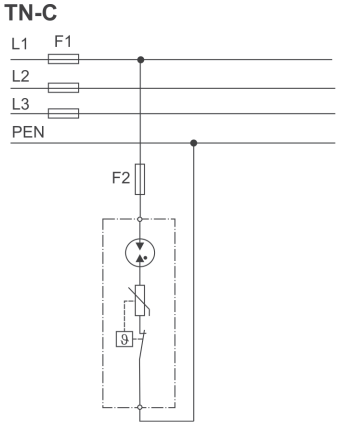




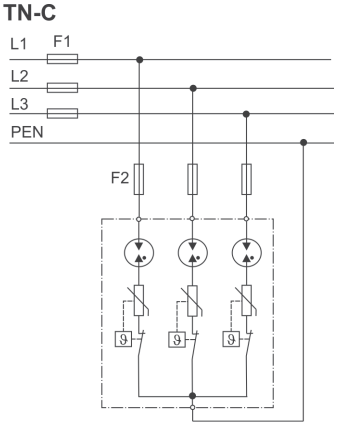
DIMENSIONS



CONNECTION DIAGRAM

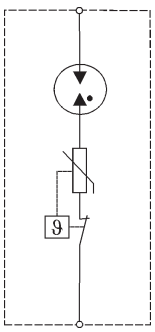


POm I LCF BD 38



POm I 3 LCF BD 114

LCF VERSION



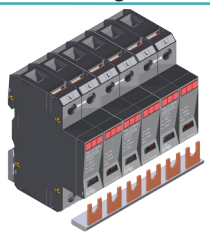
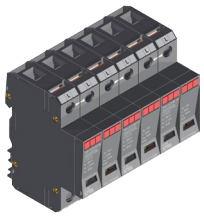
- LCF version is version with zero leaking current and zero follow current
- Possibility of application in front of electricity meter** as well as after current breaker (**valid only with the agreement of appropriate electricity supplier)
- Varistor is connected in series with gas filled spark gap

Signalling states

green = OK

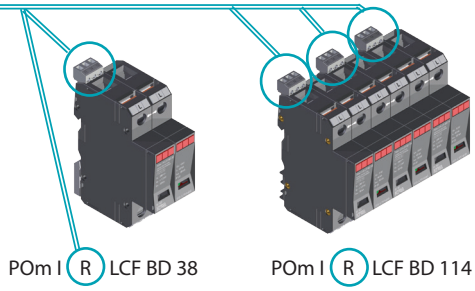
red = out of operation,
to be replaced immediately

DELIVERY AND ASSEMBLY INSTRUCTION

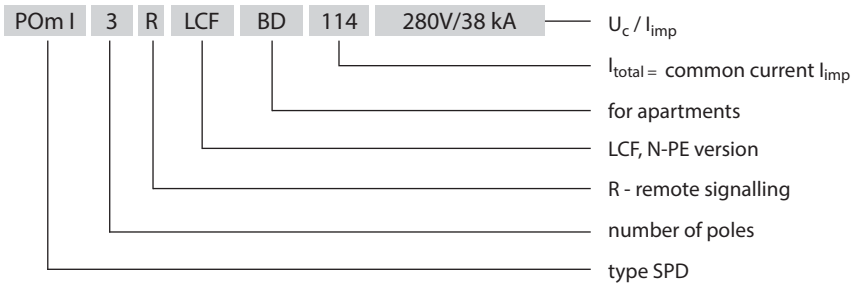
	Completed from individual poles – using individual poles taken from store during the assembly process according to needs	Delivered and assembled as one unit – simple installation
 POm I LCF BD 38 I_{imp} = 38 kA	 3x POm I LCF BD 38 I_{total} = 114 kA	 POm I 3 LCF BD 114 I_{total} = 114 kA

R VERSION

Each product's modification containing varistor module, can be supplied with remote signalling system to identify the state of SPD.



PRODUCT SPECIFICATION



TYPE	Order number
POm I LCF BD 38 280V/38kA	81.156
POm I R LCF BD 38 280V/38kA	81.157
POm I 3 LCF BD 114 280V/38kA	81.160
POm I 3 R LCF BD 114 280V/38kA	81.161

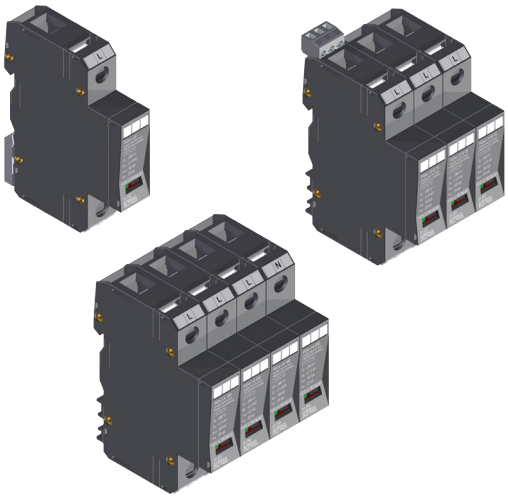
Busbars	Order number
3 pole - QB 18 - 3	91.603

TECHNICAL PARAMETERS

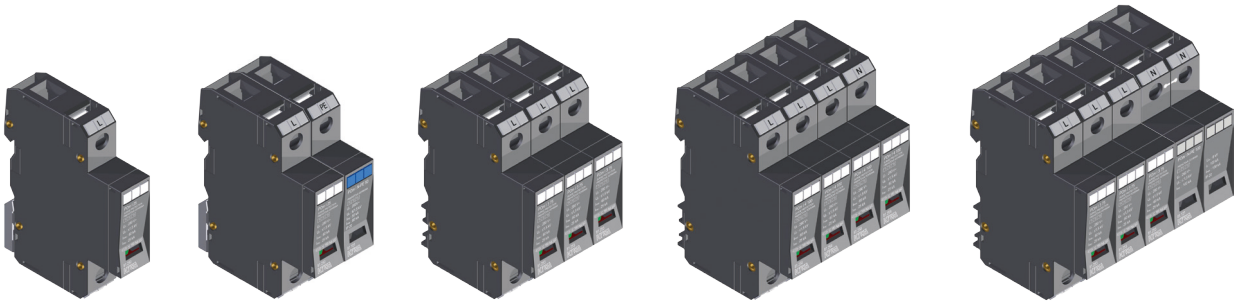
KIWA	TYPE	POm I	
		L-N	
		LCF BD 38	LCF BD 114
Number of poles		1	3
Nominal voltage	U_n	230 V AC	230 V AC
Max. operating voltage T1 T2 T3	U_c	280 V AC	280 V AC
Voltage protection level T1 T2 T3	U_p	≤1,5 kV	≤1,5 kV
Response time	t_A	<100 ns	<100 ns
Impulse current (10/350)	I_{imp}	38 kA	3x 38 kA (114 kA)
Open circuit voltage T3	U_{oc}	6 kV	6 kV
Nom. discharge current (8/20) T1 T2	I_n	40 kA	40 kA
Max. discharge current (8/20)	I_{max}	60 kA	60 kA
Prospective short-circuit current of a power supply	I_p	25 kA_{ef}	25 kA_{ef}
Overcurrent protection gL/gG		≤315 A	≤315 A
Temporary overvoltage	U_{TOV}	335 V AC	335 V AC
Residual current	I_{PE}	<1 µA	<1 µA
Follow current	I_f	-	-
Signalling changeover contact		M3/0.25 Nm, □ 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 ... +70 °C	
Degree of protection		IP 20	
Colour		black, RAL 9011	
Dimensions		97x64x17,5	97x64x35
Mounting on profiled DIN rail		35 x 7,5 mm	
Products comply with norms 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	

POm I 25

- 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 power varistors MOV and lightning arrester
- Optical and remote signalization of operation state
- Multifunctional terminals for conductors

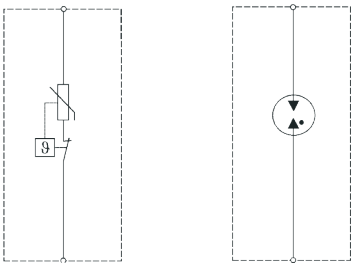


DELIVERY AND ASSEMBLY INSTRUCTION



POm I 25 | POm I 1+1 50/25 | POm I 3 75 | POm I 4 100 | POm I 3+1 100/25

BASIC AND N-PE VERSION



Basic version | N-PE version

SIGNALLING STATES

Signalling states

Green = OK

red = out of operation,
to be replaced immediately

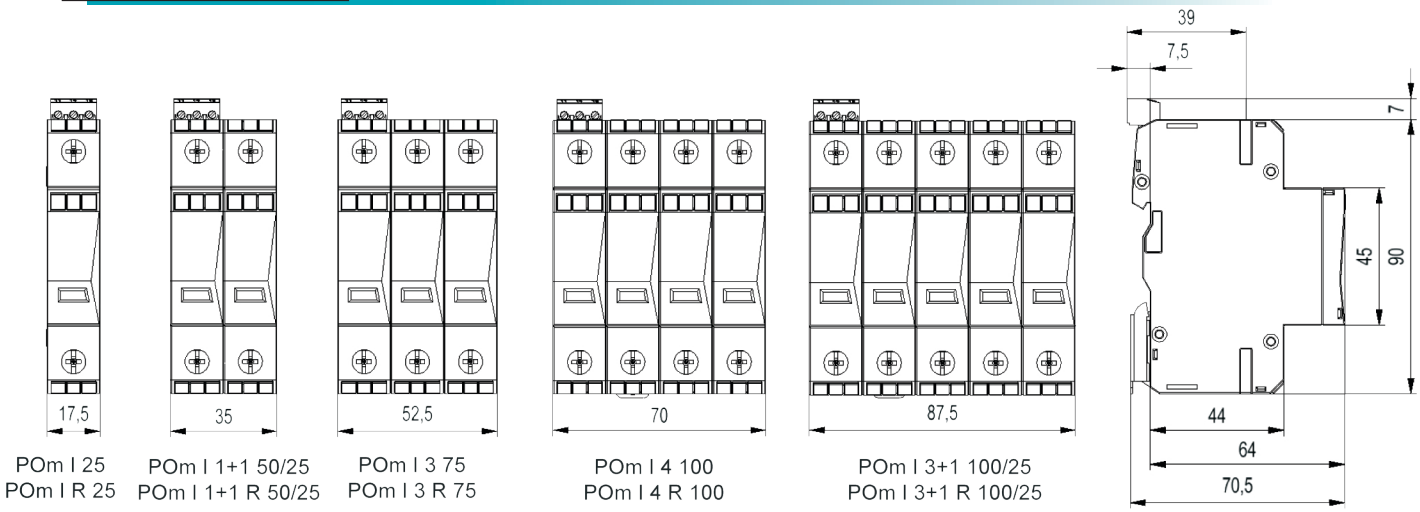
PRODUCT SPECIFICATION

POm I | 3 | R | 75 | 280 V/25 kA

- 280 V/25 kA — U_c / I_{imp}
- 75 — I_{total} - common current I_{imp}
- R - remote signalling
- 3 — number of poles
- POm I — type SPD

TYPE	Order No.
POm I 25	81.250
POm I R 25	81.255
POm I 3 75	81.253
POm I 3 R 75	81.257
POm I 4 100	81.254
POm I 4 R 100	81.258
POm I 3+1 100/25	81.259
POm I 3+1 R 100/25	81.260
POm I 1+1 50/25	81.261
POm I 1+1 R 50/25	81.262

DIMENSIONS



POm I 25
POm I R 25

POm I 1+1 50/25
POm I 1+1 R 50/25

POm I 3 75
POm I 3 R 75

POm I 4 100
POm I 4 R 100

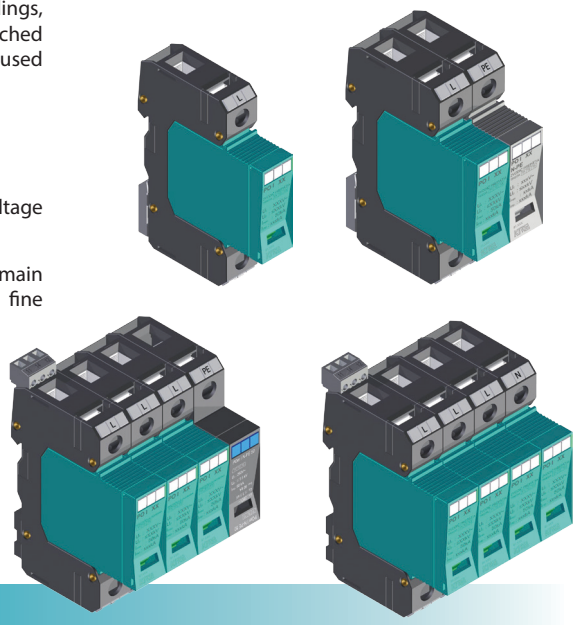
POm I 3+1 100/25
POm I 3+1 R 100/25

TECHNICAL PARAMETERS

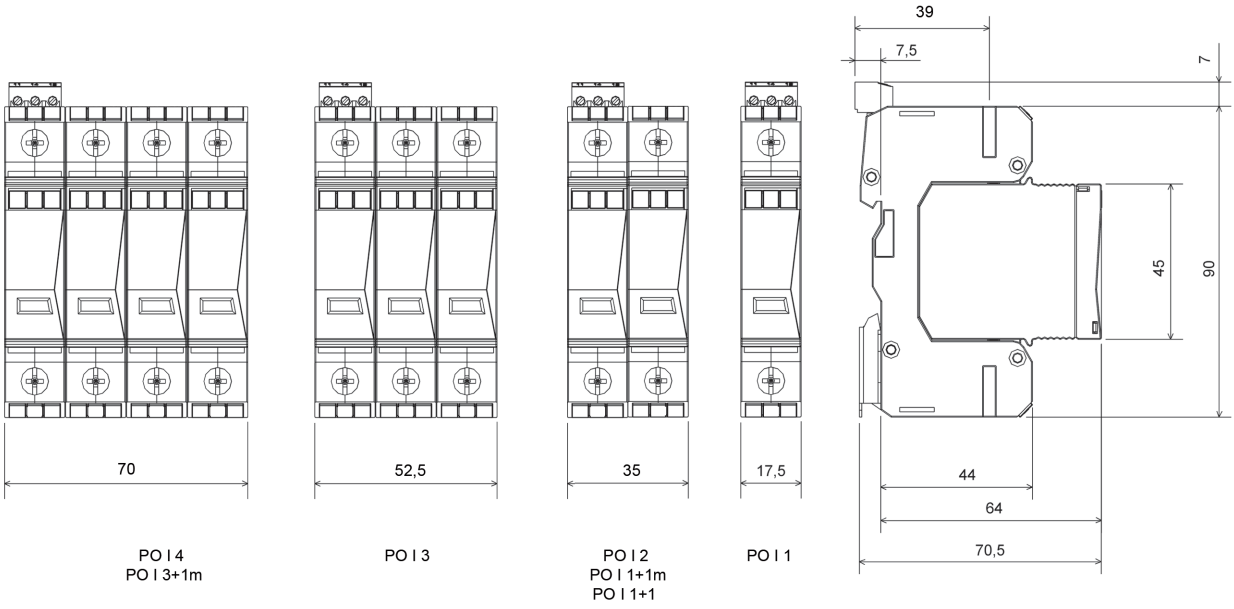
KIWA	Type	POm I		
		L-N/PE	N-PE	
		25	50	100
Number of poles		1		
Nominal voltage	U_n	230 V AC		
Max. operating voltage T1 T2 T3	U_c	280 V AC	260 V AC	
Voltage protection level T1 T2 T3	U_p	≤1,5 kV		
Response time	t_A	<25 ns	<100 ns	
Impulse current (10/350)	I_{imp}	25 kA	50 kA	100 kA
Open circuit voltage T3	U_{oc}	20 kV	10 kV	6 kV
Nom. discharge current (8/20) T1 T2	I_n	30 kA	60 kA	100 kA
Max. discharge current (8/20)	I_{max}	60 kA	60 kA	100 kA
Prospective short-circuit current of a power supply	I_p	25 kA_{ef}	-	
Overcurrent protection gL/gG		≤160 A	-	
Temporary overvoltage	U_{TOV}	335 V AC	-	
Residual current	I_{PE}	-	<1 µA	
Follow current	I_f	-	100 A	
Signalling changeover contact		M3/0.25 Nm, □ 0,2 ... 1,5 mm^2, max. 250 V AC/1A	-	
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 ... +70 °C		
Degree of protection		IP 20		
Colour		Black; RAL 9011		
Dimensions		97 x 64 x 17,5	97 x 64 x 35	
Mounting on profiled DIN rail		35 x 7,5 mm		
Products comply with norms				
EN 61643-11		type 1 T1 + type 2 T2 + type 3 T3		
IEC 61643-1		Class I + Class II + Class III		
VDE 0675-06		Klasse B + Klasse C + Klasse D		

PO I

- 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
- 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 power varistors MOV
- Version: basic part + plug-in protective modules
- Protective modules rotable with respect to the base through 180°
- Optical and remote signalization of operation state
- Multifunctional terminals for conductors and bus bars



DIMENSIONS



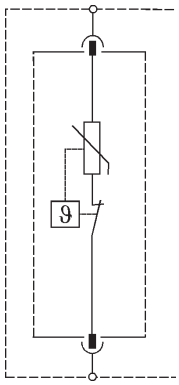
PO I 4
PO I 3+1m

PO I 3

PO I 2
PO I 1+1m
PO I 1+1

PO I 1

BASIC VERSION



Signalling states:

green = OK

red = out of operation,
to be replaced immediately

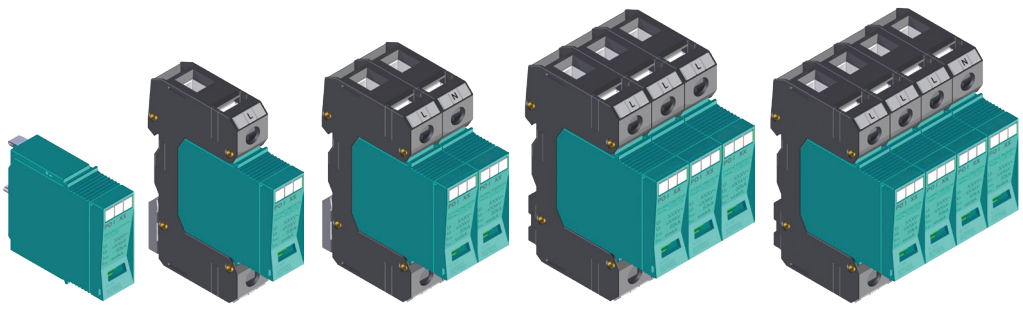
EWS VERSION

Wear signalling states in EWS version:

green = OK

yellow = replacement is recommended

red = out of operation,
to be replaced immediately

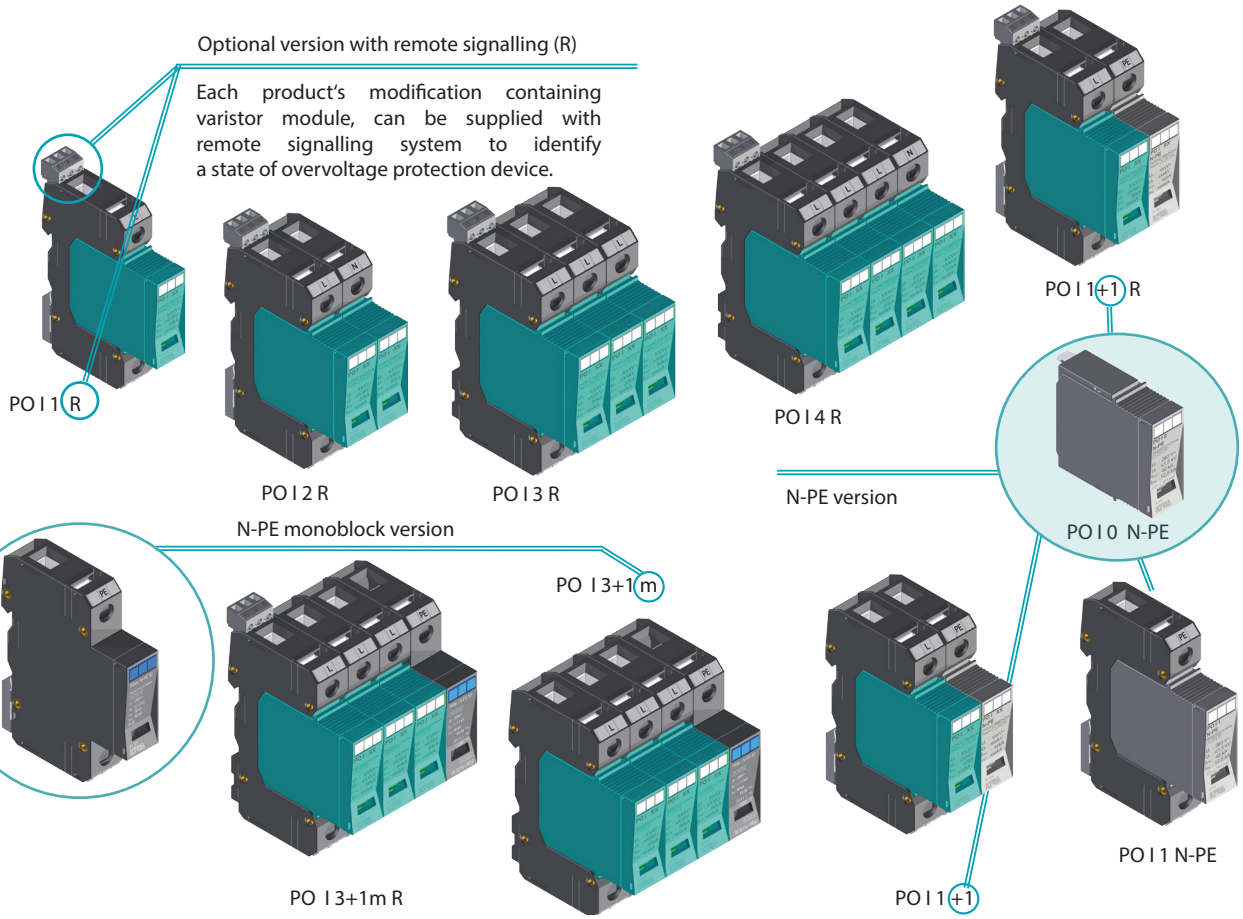


PO I 0 PO I 1 PO I 2 PO I 3 PO I 4

R and N-PE VERSION

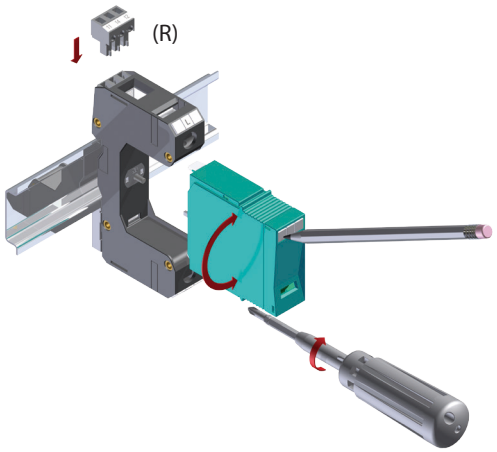
Optional version with remote signalling (R)

Each product's modification containing varistor module, can be supplied with remote signalling system to identify a state of overvoltage protection device.



INSTALLATION

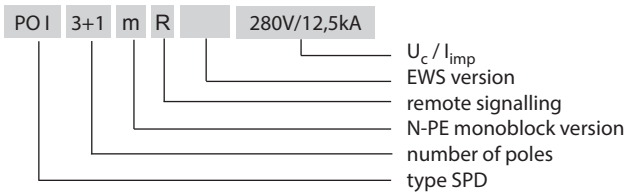
- Installation on DIN rail
- Cable labeling system using Dekafix replaceable strips
- Plug-in varistor can be turned through 180°



TECHNICAL PARAMETERS

KIWA	TYPE	PO I		POm I
		L-N	N-PE	N-PE 50
Number of poles		1	1	1
Nominal voltage	U_n	230 V~	230 V~	230 V~
Max. operating voltage T1 T2 T3	U_c	280 V~	260 V~	260 V~
Voltage protection level T1 T2 T3	U_p	≤1,3 kV	≤1,5 kV	≤1,5 kV
Response time	t_A	<25 ns	<150 ns	<100 ns
Impulse current (10/350)	I_{imp}	12,5 kA	12,5 kA	50 kA
Open circuit voltage T3	U_{oc}	20 kV	6 kV	10 kV
Nominal discharge current (8/20) T1 T2	I_n	30 kA	20 kA	60 kA
Max. discharge current (8/20)	I_{max}	50 kA	40 kA	60 kA
Prospective short-circuit current of a power supply	I_p	25 kA_{ef}	-	-
Overcurrent protection gL/gG		≤160 A	-	-
Temporary overvoltage	U_{TOV}	335 V~	-	-
Residual current	I_{PE}	-	<1 µA	<1 µA
Follow current	I_f	-	100 A	100 A
Signalling changeover contact		M3/0.25 Nm ▫ max. 1,5 mm^2 max. 250 V~/1A	-	-
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 ... 35mm^2		
	- cord	4 ... 25 mm^2		
Operating temperature range		- 40 ... +70 °C		
Degree of protection		IP 20		
Colour - plug-in varistor		turquoise blue RAL 5018	light grey RAL 7035	black RAL 9011
- holder		black ; RAL 9011		
Dimensions		97 x 64 x 17,5 mm		
Mounting on profiled DIN rail		35 x 7,5 mm		
Products comply with norms 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		

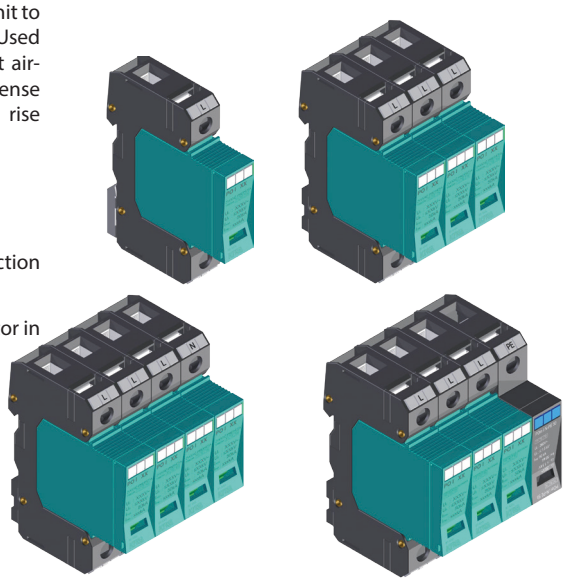
PRODUCT SPECIFICATION



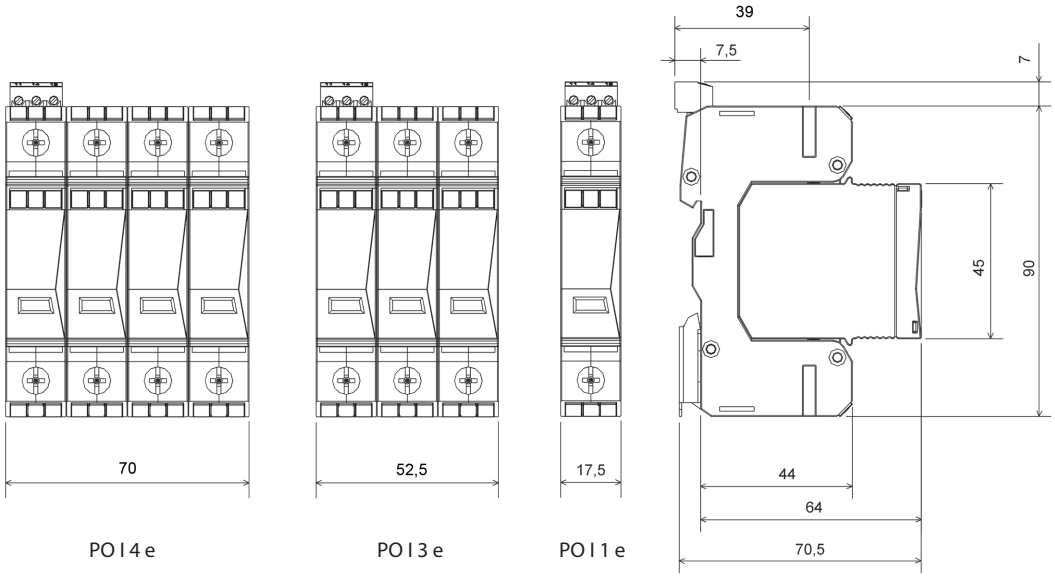
TYPE	Order №	TYPE	Order №	TYPE	Order №	TYPE	Order №	TYPE	Order №
PO I 1	81.001	PO I 2	81.002	PO I 3	81.003	PO I 4	81.004	PO I 0	81.017
PO I 1 R	81.005	PO I 2 R	81.006	PO I 3 R	81.007	PO I 4 R	81.008	PO I 0 EWS	81.020
PO I 1 EWS	81.023	PO I 2 EWS	81.024	PO I 3 EWS	81.013	PO I 4 EWS	81.014		
PO I 1 R EWS	81.025	PO I 2 R EWS	81.026	PO I 3 R EWS	81.015	PO I 4 R EWS	81.016	TYPE	Order №
PO I 1+1	81.009	PO I 3+1m	81.027	PO I 3+1m EWS	81.029	PO I 1+1m	81.031	PO I 0 N-PE	81.018
PO I 1+1 R	81.011	PO I 3+1m R	81.028	PO I 3+1m R EWS	81.030	PO I 1+1m R	81.032	PO I 1 N-PE	81.019

PO I e

- For protection of mains and appliances where no risk of a direct (lightning) hit to a building or supply network is present - LOW THREAT OF INSTALLATION. Used for objects with lightning protection level LPL IV - family houses without air-termination conductor, network supply by earth cable, situated inside dense build-up area objects and halls inside dense build up areas with high rise buildings.
- 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 power varistors MOV
- Version: basic part + plug-in protective modules
- Protective modules rotable with respect to the base through 180°
- Optical and remote signalization of operation state
- Multifunctional terminals for conductors and bus bars

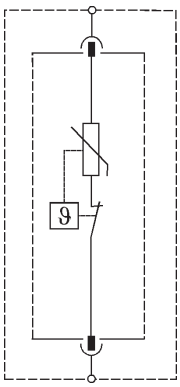


DIMENSIONS



PO I 4 e PO I 3 e PO I 1 e

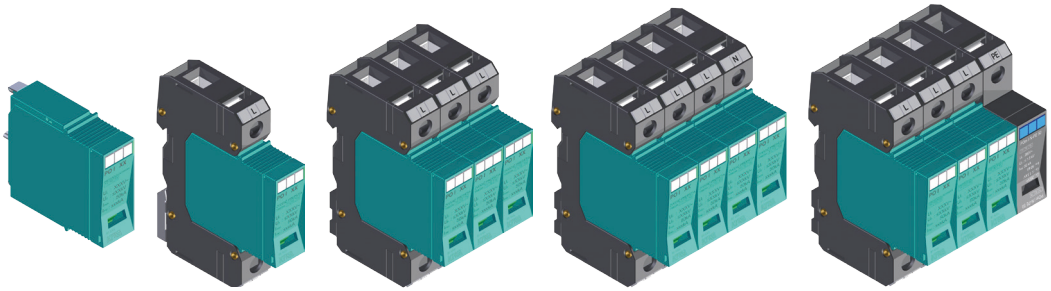
BASIC VERSION



Signalling states:

green = OK

red = out of operation,
to be replaced immediately

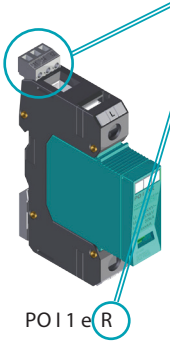


PO I 0 e PO I 1 e PO I 3 e PO I 4 e PO I 3+1m e

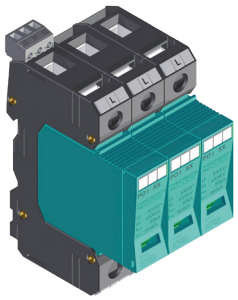
R and N-PE VERSION

Optional version with remote signalling (R)

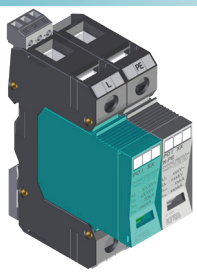
Each product's modification containing varistor module, can be supplied with remote signalling system to identify a state of overvoltage protection device.



PO I 1 e R

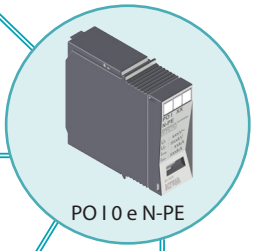


PO I 3 e R

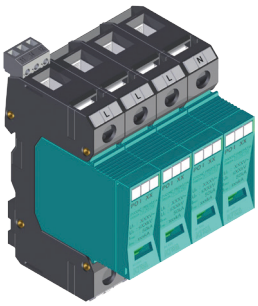


PO I 1+1 e R

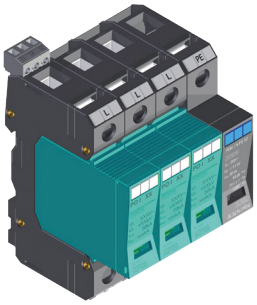
N-PE version



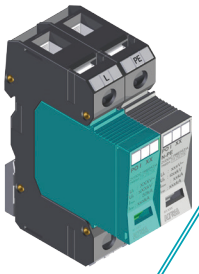
PO I 0 e N-PE



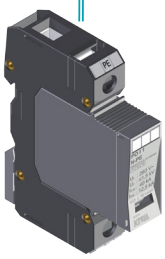
PO I 4 e R



PO I 3+1m e R



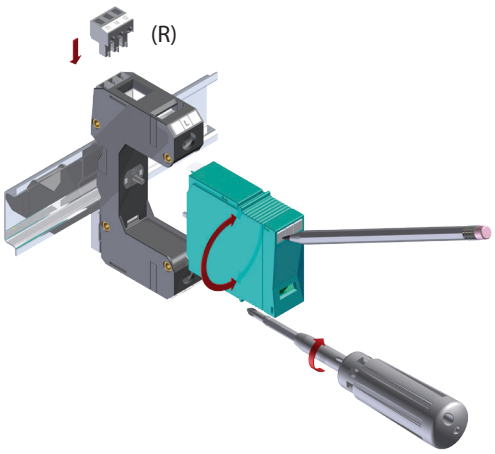
PO I 1+1 e



PO I 1 e N-PE

INSTALLATION

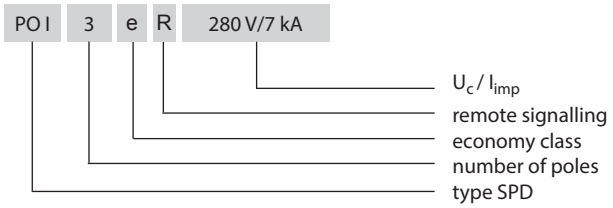
- Installation on DIN rail
- Cable labeling system using Dekafix replaceable strips
- Plug-in varistor can be turned through 180°



TECHNICAL PARAMETERS

KIWA	TYPE	PO I e	
		L-N	N-PE
Number of poles		1	1
Nominal voltage	U_n	230 V AC	230 V AC
Max. operating voltage T1 T2 T3	U_c	280 V AC	260 V AC
Voltage protection level T1 T2 T3	U_p	≤1,3 kV	≤1,5 kV
Response time	t_A	<25 ns	<100 ns
Impulse current (10/350)	I_{imp}	7 kA	12,5 kA/25 kA
Open circuit voltage T3	U_{oc}	10 kV	6 kV
Nom. discharge current (8/20) T1 T2	I_n	20 kA	20 kA
Max. discharge current (8/20)	I_{max}	40 kA	40 kA
Prospective short-circuit current of a power supply	I_p	25 kA_{ef}	-
Overcurrent protection gL/gG		≤160 A	-
Temporary overvoltage	U_{TOV}	335 V AC	-
Residual current	I_{PE}	-	<1 µA
Follow current	I_f	-	100 A
Signalling changeover contact		M3/0.25 Nm, □ 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 ... 35mm^2	
	- cord	4 ... 25 mm^2	
Operating temperature range		- 40 ... +70 °C	
Degree of protection		IP 20	
Colour - plug-in varistor		turquoise blue RAL 5018	light grey RAL 7035
- holder		black, RAL 9011	
Dimensions		97 x 64 x 17,5 mm	
Mounting on profiled DIN rail		35 x 7,5 mm	
Products comply with norms 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	

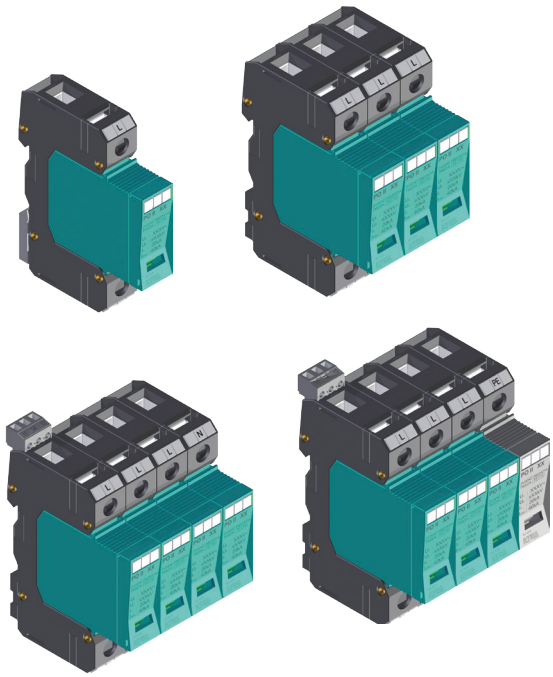
PRODUCT SPECIFICATION



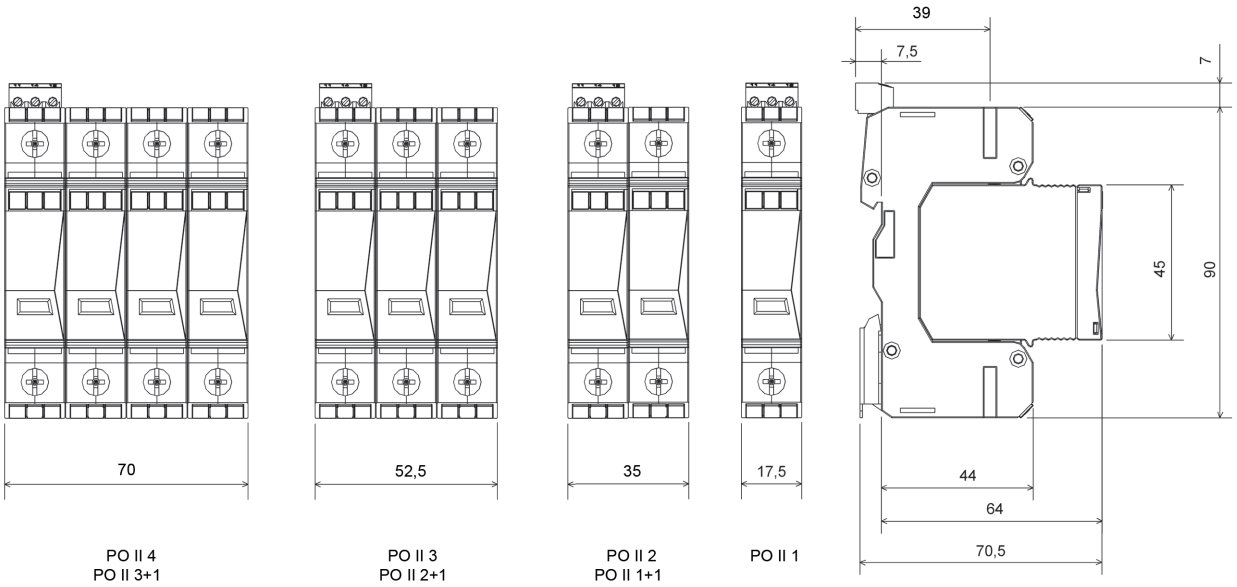
TYPE	Order №	TYPE	Order №
PO I 1 e	81.200	PO I 3+1m e	81.206
PO I 3 e	81.201	PO I 3+1m e R	81.207
PO I 1 e R	81.202	PO I 0 e	81.208
PO I 3 e R	81.203	PO I 0 e N-PE	81.209
PO I 1+1 e	81.204	PO I 4 e	81.210
PO I 1+1 e R	81.205	PO I 4 e R	81.211

PO II

- For protection of mains and appliances in industrial buildings, administration buildings, buildings of civil amenities, detached houses and flats against the overvoltage
- Decreases overvoltage and restricts overvoltage energy wave caused by induction and switching activities in the low-voltage power supply
- Installation: into the sub-distribution board
- Usage as the 2nd level (T2 , medium protection) in 3-level overvoltage protection concept
- Provides protection against the overvoltage for appliances placed in the sub-distribution board in the range of T2 , T3 (medium, fine protection)
- High diverting capability provided by power varistors MOV and by gas filled spark gaps
- Version: basic part + plug-in protective modules
- Protective modules rotable with respect the base through180°
- Optical and remote signalization of operation state
- Optical signalization of wear state (EWS version)
- Zero leakage current (LCF version)
- Multifunctional terminals for conductors and bus bars



DIMENSIONS



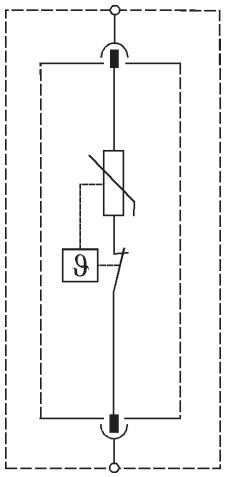
PO II 4
PO II 3+1

PO II 3
PO II 2+1

PO II 2
PO II 1+1

PO II 1

BASIC VERSION



Signalling states:

green = OK

red = out of operation,
to be replaced immediately

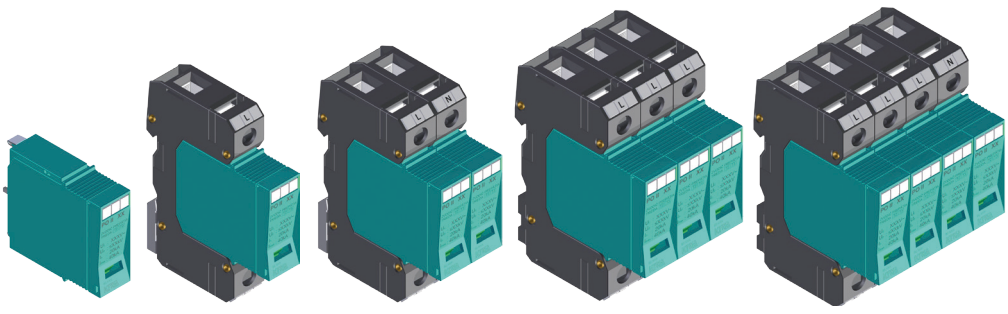
EWS VERSION

Wear signalling states in EWS version:

green = OK

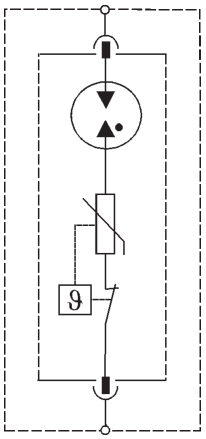
yellow = replacement is recommended

red = out of operation,
to be replaced immediately

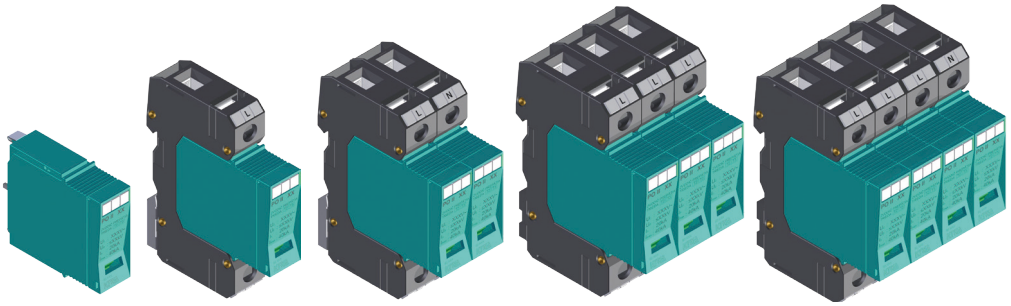


PO II 0 PO II 1 PO II 2 PO II 3 PO II 4

LCF VERSION

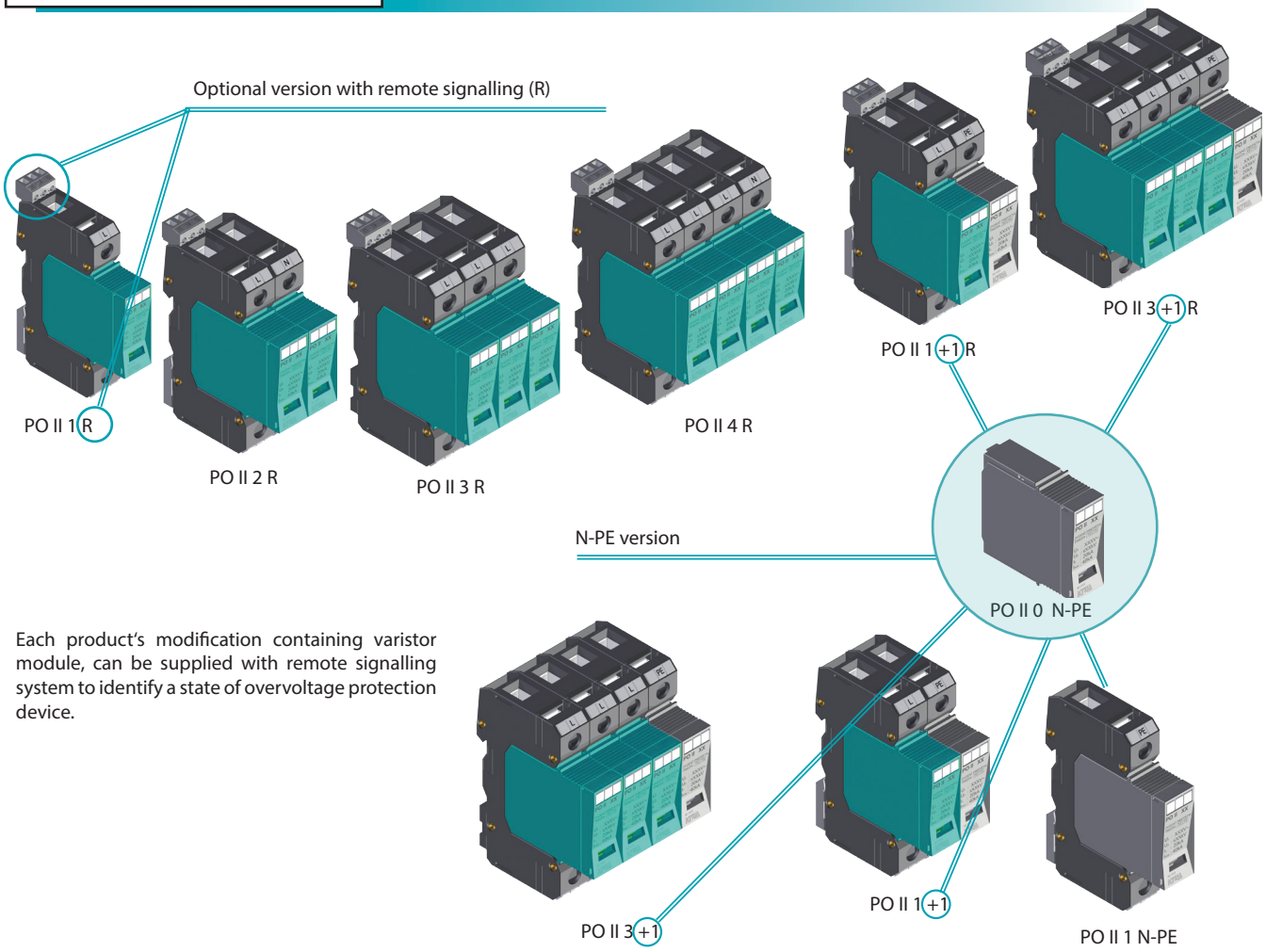


- LCF version is overvoltage protection with suppressed residual current
- The device can be connected in front of electricity meter
- Varistor is connected in series with gas filled spark gap



PO II 0 LCF PO II 1 LCF PO II 2 LCF PO II 3 LCF PO II 4 LCF

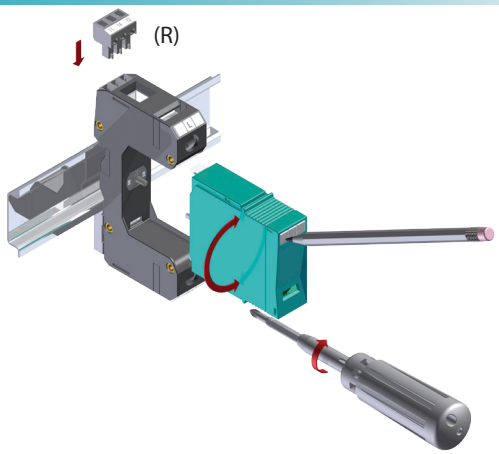
R and N-PE VERSION



Each product's modification containing varistor module, can be supplied with remote signalling system to identify a state of overvoltage protection device.

INSTALLATION

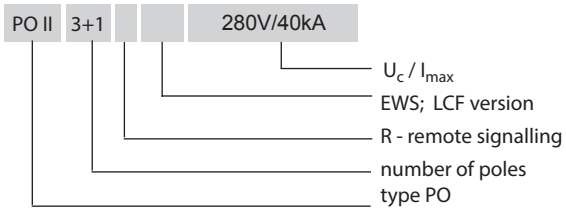
- Installation on DIN rail
- Cable labeling system using Dekafix replaceable strips
- Plug-in varistor can be turned through 180°



TECHNICAL PARAMETERS

KIWA TYPE		PO II					
		L-N					N-PE
		280 V	75 V	130 V	385 V	550 V	
Number of poles		1	1	1	1	1	1
Nominal voltage	U_n	230 V~	60 V~	120 V~	385 V~	470 V~	230 V~
Max. operating voltage T2 T3	U_c	280 V~	75 V~	130 V~	385 V~	550 V~	260 V~
Voltage protection level T2 T3	U_p	≤1,45 kV	≤0,7 kV	≤0,85 kV	≤1,8 kV	≤2,65 kV	≤1,45 kV
Response time	t_A	<25 ns					<150 ns
Open circuit voltage T3	U_{oc}	6 kV					
Nominal discharge current (8/20) T2	I_n	20 kA					
Max. discharge current (8/20)	I_{max}	40 kA					
Prospective short-circuit current of a power supply	I_p	25 kA_{ef}					-
Overcurrent protection gL/gG		≤ 125 A					-
Temporary overvoltage	U_{TOV}	335 V~	90 V~	175 V~	560 V~	685 V~	-
Residual current	I_{PE}	-					<1 µA
Follow current	I_f	-					100 A
Signalling changeover contact		M3/0.25 Nm, □ max. 1,5 mm^2, max. 250V~/1A					-
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 ... 35 mm^2					
	- cord	4 ... 25 mm^2					
Operating temperature range		- 40 ... +70 °C					
Degree of protection		IP 20					
Colour - plug-in varistor		turquoise blue, RAL 5018					light grey, RAL 7035
- holder		black; RAL 9011					black; RAL 9011
Dimensions		97 x 64 x 17,5 mm					
Mounting on profiled DIN rail		35 x 7,5 mm					
Products comply with norms EN 61643-11 IEC 61643-1 VDE 0675-06		type 2 T2 + type 3 T3 Class II + Class III Klasse C + Klasse D					

PRODUCT SPECIFICATION



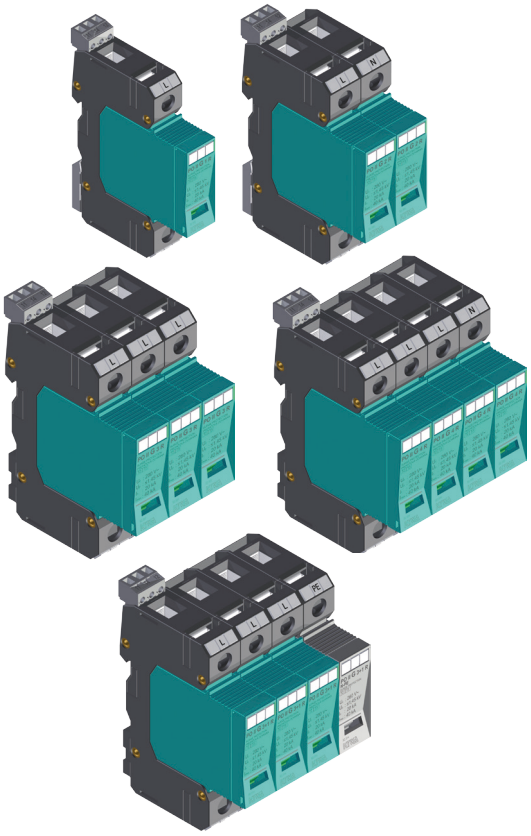
TYPE / U_c	Order number				
	280 V AC	75 V AC	130 V AC	385 V AC	550 V AC
PO II 1	82.001	82.021	82.025	82.033	82.043
PO II 1 R	82.005	82.023	82.029	82.037	82.047
PO II 1 EWS	82.068				
PO II 1 R EWS	82.070				
PO II 1+1	82.017				
PO II 1+1 R	82.019				
PO II 1 LCF	82.064				
PO II 1 R LCF	82.066				
PO II 2	82.002	82.022	82.026	82.034	82.044
PO II 2 R	82.006	82.024	82.030	82.038	82.048
PO II 2 EWS	82.069				
PO II 2 R EWS	82.071				
PO II 2+1	82.062				82.051
PO II 2+1 R	82.063				82.052
PO II 2 LCF	82.065				
PO II 2 R LCF	82.067				

TYPE / U_c	Order number				
	280 V AC	75 V AC	130 V AC	385 V AC	550 V AC
PO II 3	82.003		82.027	82.035	82.045
PO II 3 R	82.007		82.031	82.039	82.049
PO II 3 EWS	82.013				
PO II 3 R EWS	82.015				
PO II 3+1	82.018			82.041	
PO II 3+1 R	82.020			82.042	
PO II 3 LCF	82.009				
PO II 3 R LCF	82.011				
PO II 4	82.004		82.028	82.036	82.046
PO II 4 R	82.008		82.032	82.040	82.050
PO II 4 EWS	82.014				
PO II 4 R EWS	82.016				
PO II 4 LCF	82.010				
PO II 4 R LCF	82.012				
PO II 0	82.053	82.056	82.057	82.058	82.059
PO II 0 LCF	82.054				
PO II 0 EWS	82.055				

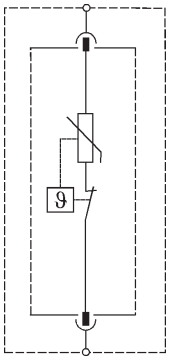
TYPE / U_c	Order number
	260 V AC
PO II 0 N-PE	82.060
PO II 1 N-PE	82.061

PO II G 280V/40kA

- PO II G complies with new standarts: **EN 61643-11: 2012, thereby is guaranteed higher reliability and safety**
- It decreases overvoltage and restricts overvoltage energy wave caused by induction and switching activities in the low-voltage power supply
- For protection of mains and appliances in industrial buildings, administration buildings, buildings of civil amenities, detached houses and flats against the overvoltage
- Installation: into the sub-distribution board
- Usage as the 2nd level (T2 , medium protection) in 3-level overvoltage protection concept
- Provides protection against the overvoltage for appliances placed in the sub-distribution board in the range of T2, T3 (medium, fine protection
- High diverting capability provided by power varistors MOV and by gas filled spark gaps
- Version: basic part + plug-in protective modules
- Protective modules rotable with respect the base through180°
- Optical and remote signalization of operation state
- Multifunctional terminals for conductors and bus bars



CONNECTION DIAGRAM



PO II G 1 280V/40kA

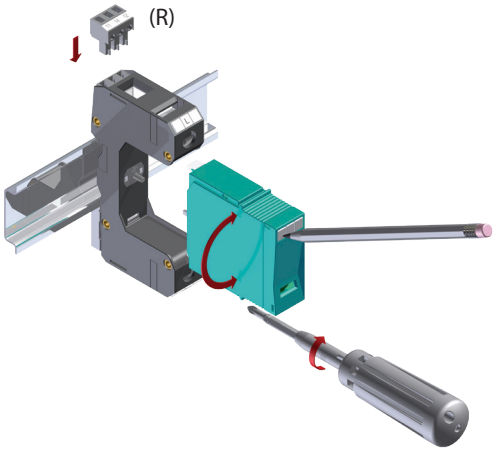
SIGNALLING STATES

green = OK

red = out of operation,
to be replaced immediately

INSTALLATION

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

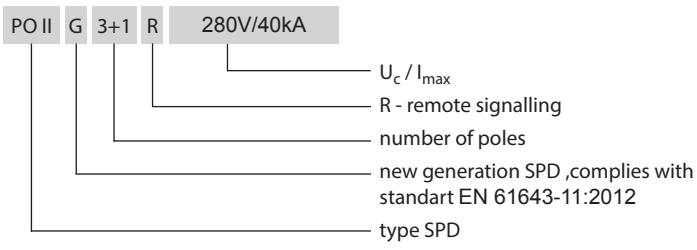


TECHNICAL PARAMETERS

KIWA	Type	PO II G 280V/40kA	
		L-N 280 V AC	N-PE
Number of poles		1	1
Nominal voltage	U_n	230 V AC	230 V AC
Max. operating voltage T2 T3	U_c	280 V AC	260 V AC
Voltage protection level T2 T3	U_p	≤1,45 kV	≤1,45 kV
Response time	t_A	<25 ns	<150 ns
Open circuit voltage T3	U_{oc}	6 kV	
Nominal discharge current (8/20) T2	I_n	20 kA	
Max. discharge current (8/20)	I_{max}	40 kA	
Prospective short-circuit current of a power supply	I_p	25 kA_{ef}	-
Overcurrent protection gL/gG		≤125 A	-
Temporary overvoltage	U_{TOV}	335 V AC	-
Residual current	I_{PE}	-	<1 µA
Follow current	I_f	-	100 A
Signalling changeover contact		M3/0.25 Nm, □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		-	-
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 ... +70 °C	
Degree of protection		IP 20	
Colour - plug-in varistor		turquoise blue, RAL 5018	light grey RAL 7035
- holder		black; RAL 9011	black; RAL 9011
Dimensions		97 x 64 x 17,5 mm	
Mounting on profiled DIN rail		35 x 7,5 mm	
Products comply with norms			
EN 61643-11		type 2 T2 + type 3 T3	
IEC 61643-1		Class II + Class III	
VDE 0675-06		Klasse C + Klasse D	

PRODUCT SPECIFICATION

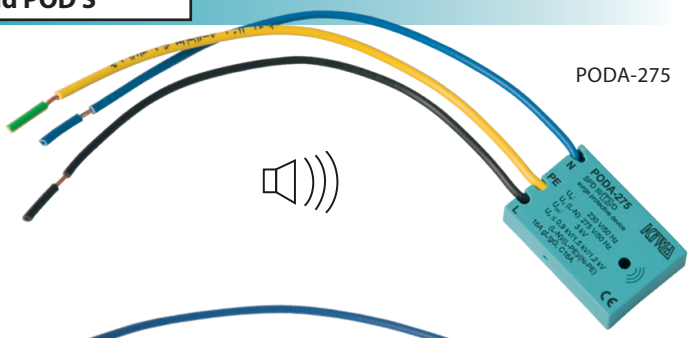
TYPE	Order No. 280 V AC	TYPE	Order No. 280 V AC	TYPE	Order No. 260 V AC
PO II G 1	82.301	PO II G 3	82.303	PO II G 0 N-PE	82.315
PO II G 1 R	82.305	PO II G 3 R	82.307	PO II G 1 N-PE	82.316
PO II G 1+1	82.309	PO II G 3+1	82.313		
PO II G 1+1 R	82.310	PO II G 3+1 R	82.314		
PO II G 2	82.302	PO II G 4	82.304		
PO II G 2 R	82.306	PO II G 4 R	82.308		
PO II G 2+1	82.311	PO II G 0	82.317		
PO II G 2+1 R	82.312				

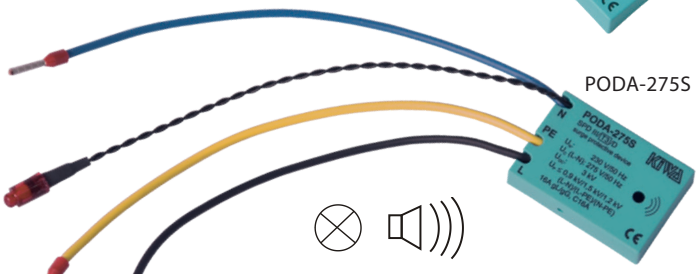


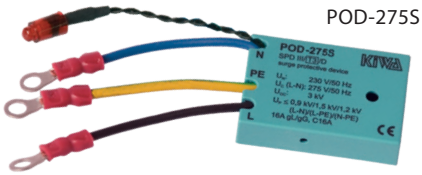
OVERVOLTAGE PROTECTION MODULES

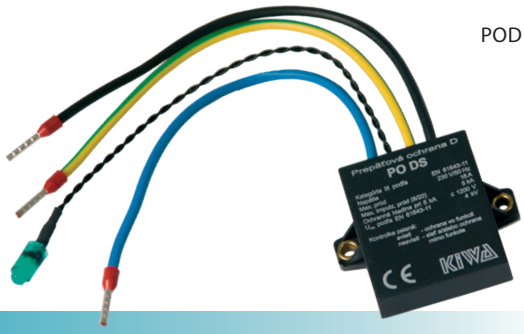
PODA-275, PODA-275S, POD-275S and POD S

- Usage as 3rd level (T3 , fine protection) in 3-level overvoltage protection concept
- It decreases overvoltage and reduces overvoltage wave energy caused by induction and switching processes in the connected low voltage network
- Installation into the cable channel and installation boxes or to terminalss of the protected appliance
- Protection against the transverse and longitudinal overvoltage (L/N, L/PE, N/PE)
- Protective effect provided by a varistor combined with spark gap
- Optical and/or acoustical signalization of operational state

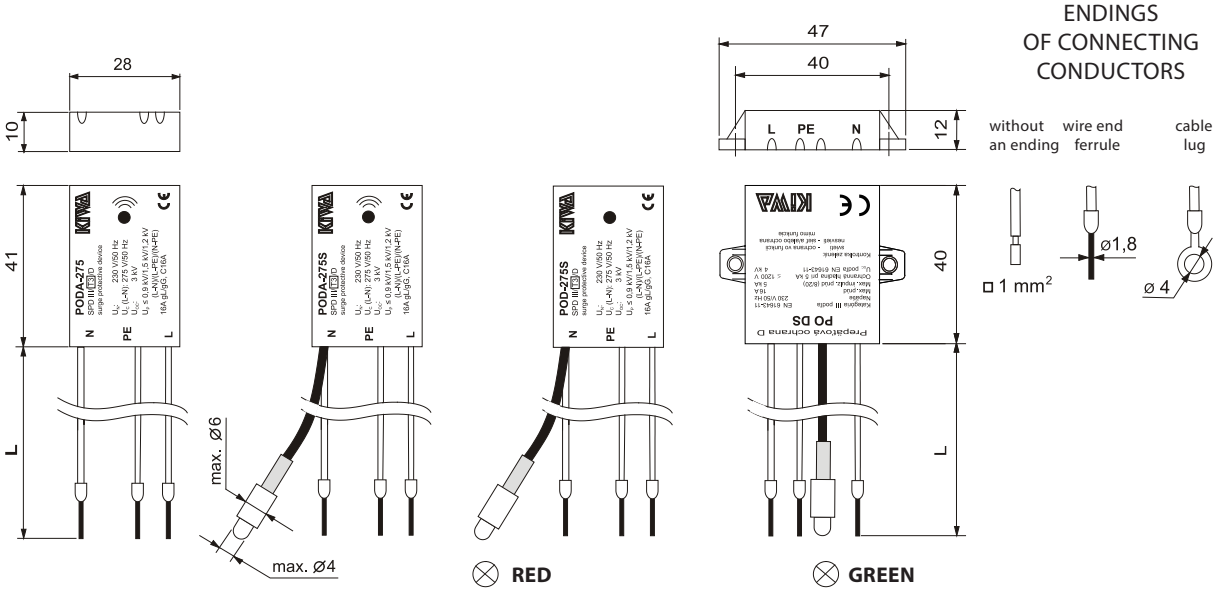








DIMENSIONS



PODA-275
with acoustic signalling

PODA-275S
with acoustic
and optic signalling

POD-275S
with optic signalling

POD S
with optic signalling

TECHNICAL PARAMETERS

KIWA	TYPE	PODA-275	PODA-275S	POD-275S	POD S
Nominal voltage	U_n	230 V~			230 V~
Max. operating voltage	U_c (L-N)	275 V~			275 V~
Open curcuit voltage	U_{oc}	3 kV			4 kV
Voltage protection level	U_p (L-N)	≤0,9 kV			≤1,2 kV
	U_p (L-PE)	≤1,5 kV			≤1,5 kV
	U_p (N-PE)	≤1,2 kV			≤1,5 kV
Response time	t_A (L-N)	<25 ns			<25 ns
	t_A (L-PE)	<100 ns			<100 ns
Overcurrent protection gL/gG or a protector B, C		≤16 A			≤16 A
Prospective short-circuit current of a power supply	I_p	6 kA_{ef}			6 kA_{ef}
Operating temperature range		- 25 ... +40 °C			- 25 ... +40 °C
Degree of protection		IP 20			IP 20
Status indication of TDD (Thermic Disconnecting Device)		A	A,S - red (OUT)	S - red (OUT)	S - green (OK)
Colour		turquose blue; RAL 5018			black; RAL 9011
Dimensions		28x41x10 mm			47x40x12 mm
Products comply with norms EN 61643-11 IEC 61643-1 VDE 0675-06		type 3 T3 Class III Klasse D			

PRODUCT SPECIFICATION

P O D [ ] **- 2 7 5** [ ]

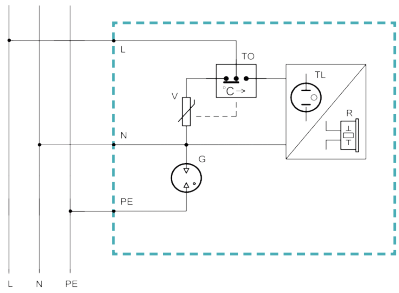
- **S** - optic signalling - red (OUT), green (OK)
- Max. operating voltage (V AC)
- **A** - acoustic signalling

TYPE	PODA-275						PODA-275S		POD-275S			POD S
Order number	92.133/x						92.134/x		92.135/x			92.021
x	90	10	20	30	40	50	90	10	90	10	20	
L (mm)	160	50	60	on order	on order	160	160	on order	160	50	60	150
Tape of ending						 *		on order				
Recommended for sockets (other kinds on demand)		Valena(1) 774396 a 774398 Tango(2) 5513A-C02357	Tango(1) 5518A-A2349 Tango(2) 5512A-A2349 Classic(1) 5517-2389 Classic(2) 5512C-2349							Valena(1) 774396 a 774398 Tango(2) 5513A-C02357	Tango(1) 5518A-A2349 Tango(2) 5512A-A2349 Classic(1) 5517-2389 Classic(2) 5512C-2349	

Note: * package contains both types of endings

INSTALLATION

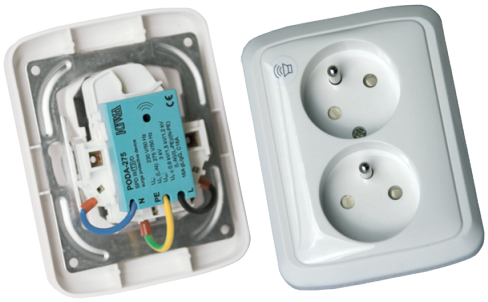
CONNECTION DIAGRAM

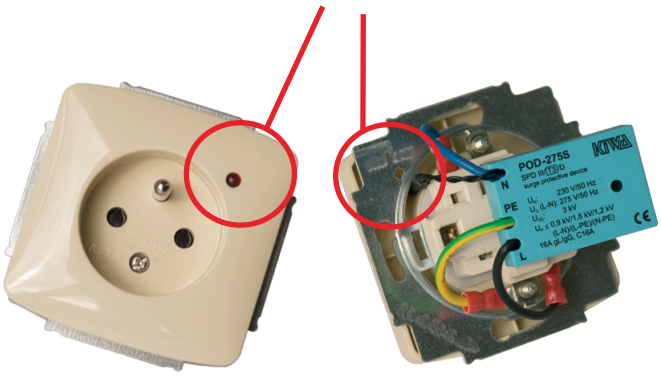


POD is connected to the electric installation by conductors with wire end ferrules, cable lugs or without any endings – according to the realization.

POD is parallel-connected to distribution conductors of electric installation or directly to clamps of the protected appliance. It is necessary to respect the marking of conductors at the assembly (L, N, PE).

Optical status indicator of POD S, POD-275S and PODA-275S is either sticked or luted at assembly into the hole of 4 mm diameter in the cover of socked.



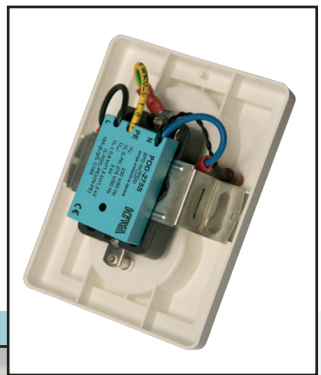


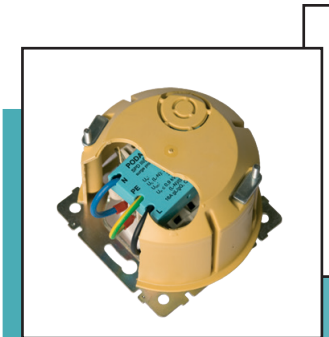
Although the surge protective unit POD itself provides protection against overvoltage, it is recommended that its installation is performed with a front-end SPD of the Type 2 in accordance with the concept of overvoltage protection coordination.

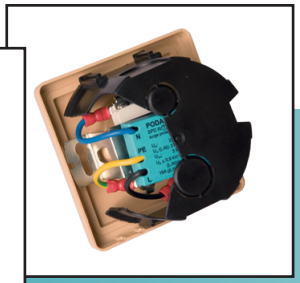
APPLICATIONS

Module of surge protective device POD is designed for

- assembly into installation channels or floor systems;
- additional assembly into installation boxes under the sockets – for all common types of sockets, it is imbedded into electro-installation boxes with minimum depth of 40 mm;
- assembly into installation boxes;
- directly into electric machines, appliances and equipment.

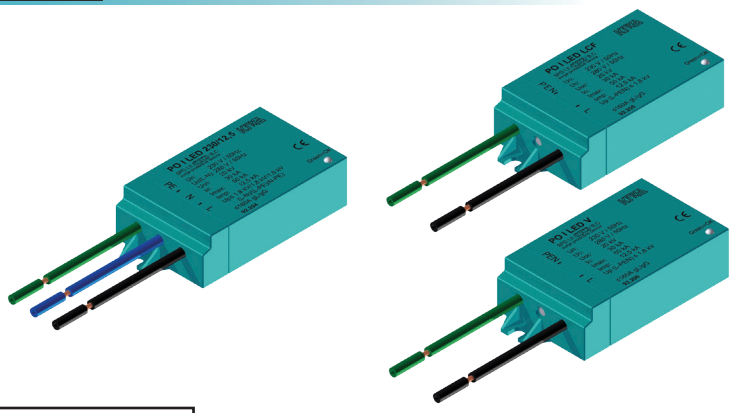




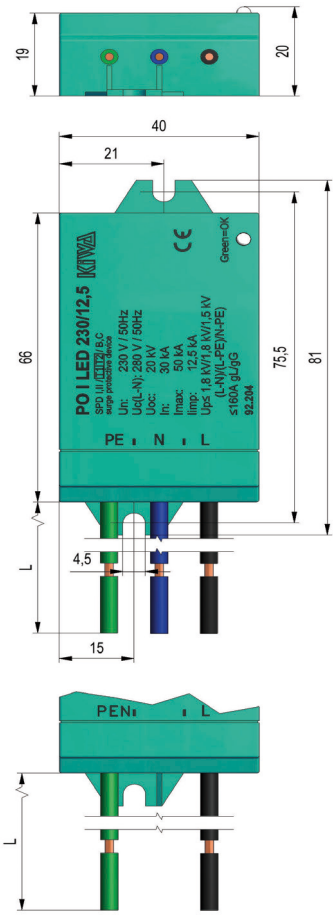


PO I LED, PO I LED V, PO I LED LCF (230V/12,5kA)

- Usage for LED lihts as 1st and 2nd level (T1 coarse and T2, medium) in 3-level overvoltage protection concept.
- It decreases overvoltage and reduces overvoltage wave energy caused by induction and switching processes in the connected low voltage network.
- Installation into the installation boxes to terminals of protected appliance or cable channel.
- Protection against the transverse and longitudinal overvoltage (L/N, L/PE, N/PE) and (L/PEN).
- Protective effect provided by a varistor combined with spark gap.
- Optical signalization of operational state.



DIMENSIONS



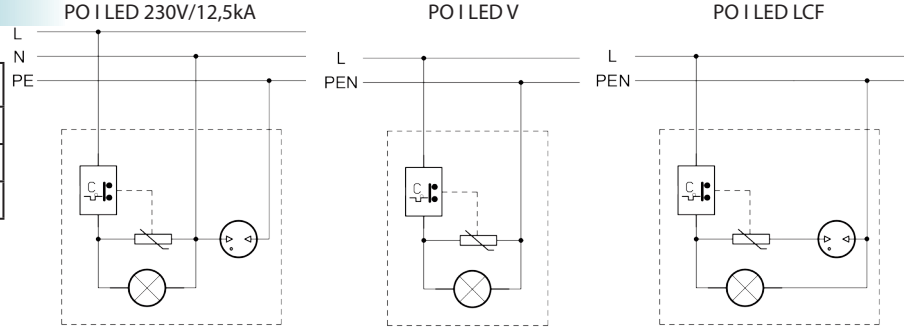
TECHNICAL PARAMETERS

TYPE		PO I LED	PO I LED V	PO I LED LCF
Specification		TN-S Patented	TN-C Patented	TN-C Patented
Connection		wire 2,5mm²	wire 2,5mm²	wire 2,5mm²
L (mm)		160	160	160
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC
Max. operation voltage	U_c	280 V AC	280 V AC	280 V AC
Impulse current (10/350) T1	I_{imp}	12,5 kA	12,5 kA	12,5 kA
Nom. discharge current (8/20) T1 T2	I_n	30 kA	30 kA	30 kA
Max. discharge current (8/20)	I_{max}	50 kA	50 kA	50 kA
Open curcuit voltage	U_{oc}	20 kV	20 kV	20 kV
Voltage protection level	U_p (L-N)	≤1,5 kV	-	-
	U_p (L-PE)	≤1,8 kV	-	-
	U_p (N-PE) U_p (L-PEN)	≤1,5 kV -	- ≤1,5 kV	- ≤1,8 kV
Response time	t_A (L-N)	<25 ns	<25 ns	<25 ns
	t_A (L-PE)	<100ns	<100ns	<100ns
Prospective short-circuit current of a power supply	I_P	25 kA_{ef}	25 kA_{ef}	25 kA_{ef}
Overcurrent protection gL/gG or a protector B, C		≤160 A	≤160 A	≤160 A
Operating temperature range	T_A	- 45 to + 85 °C	- 45 to + 85 °C	- 45 to + 85 °C
Storage temperature range	T_{stg}	- 45 to + 85 °C	- 45 to + 85 °C	- 45 to + 85 °C
Isolation voltage capability min.*1		2200 V	2200 V	2200 V
Degree of protection		IP 66		
Status indication of TDD (Thermic Disconnecting Device)		optical, green (OK)		
Colour		turquoise blue; RAL 5018		
Dimensions (mm)		40 x 81 x 20		
Products comply with norms 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		

Note: *1 (When the thermal disconnect opens)

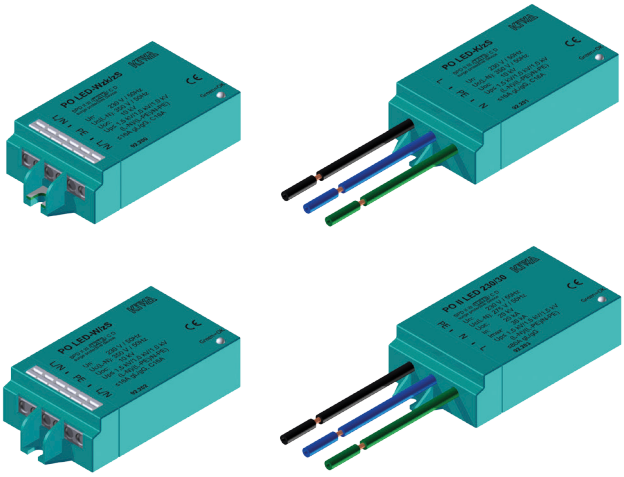
PRODUCT SPECIFICATION

TYPE	Order No.	Package
PO I LED 230V/12,5kA	92.204	1 pc
PO I LED V 230V/12,5kA	92.206	1 pc
PO I LED LCF 230V/12,5kA	92.205	1 pc



PO II LED, PO LED

- Usage for LED lights as 2nd and 3rd level (T2 medium and T3, fine protection) in 3-level overvoltage protection concept.
- It decreases overvoltage and reduces overvoltage wave energy caused by induction and switching processes in the connected low voltage network.
- Installation into the cable channel and installation boxes or to terminals of the protected appliance.
- Protection against the transverse and longitudinal overvoltage (L/N, L/PE, N/PE).
- Protective effect provided by a varistor combined with spark gap.
- Optical signalization of operational state.



TECHNICAL PARAMETERS

TYPE		PO II LED 230V/30kA	PO LED-Wzk/zS	PO LED-W/zS	PO LED-K/zS
Connection		wire 2,5mm²	terminal block, max. 1,5mm²		wire 1,5mm²
L (mm)		160	-		160
Nominal voltage	U_n	230 V AC	230 V AC		
Max. operation voltage	U_c	275 V AC	350 V AC		
Nominal discharge current (8/20) T2	I_n	20 kA	5 kA		
Max. discharge current (8/20)	I_{max}	30 kA	10 kA		
Open curcuit voltage	U_{oc}	20 kV	10 kV		
Voltage protection level	U_p (L-N)	≤1,4 kV	≤1,5 kV		
	U_p (L-PE)	≤1,4 kV	≤1 kV		
	U_p (N-PE)	≤1,4 kV	≤1 kV		
Response time	t_A (L-N)	<25 ns	<25 ns		
	t_A (L-PE)	<100ns	<100ns		
Prospective short-circuit current of a power supply	I_P	25 kA_{ef}	10 kA_{ef}		
Overcurrent protection gL/gG or a protector B, C		≤80 A	≤16 A		
Operating temperature range	T_A	- 45 ... + 85 °C	- 25 ... + 80 °C		
Storage temperature range	T_{stg}	- 45 ... + 110 °C	-		
Isolation voltage capability min.*1		1500 V	-		
Degree of protection		IP 66	IP 20		
Status indication of TDD (Thermic Disconnecting Device)		optical, green (OK)			
Colour		turquoise blue; RAL 5018			
Dimensions (mm)		40 x 73,5 x 20			
Products comply with norms EN 61643-11 IEC 61643-1 VDE 0675-06		type 2 T2 + type 3 T3 class II + class III Klasse C + Klasse D			

Note: *1 (When the thermal disconnect opens)

PRODUCT SPECIFICATION

PO/PO II LED - ☐ / ☐

- ☐ **zS** - optical signalization - green (OK)
- ☐ **W** - terminal block
  K - cord connection
  Wzk - terminal block + ground connector

TYPE	Order No.
PO LED-Wzk/zS	92.200
PO LED-K/zS	92.201
PO LED-W/zS	92.202
PO II LED 230V/30kA	92.203

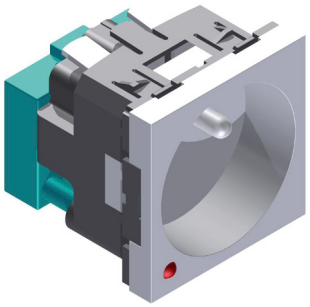
Condition of 10 y. Warranty: Although the surge protective unit PO LED itself provides protection against overvoltage,it is necessary that its installation is performed with a front-end protecting device of the Type 1 (or Type 2) in accordance with the concept of over-voltage protection coordination.

OVERVOLTAGE PROTECTION SOCKETS

ZPO D, ZPOI D

- Usage as 3rd level (T3 , fine protection) in 3-level protection concept against overvoltage
- It decreases overvoltage and reduces overvoltage wave energy caused by induction and switching processes in the connected low voltage network
- Installation into the installation boxes
- Protection against the transverse and longitudinal overvoltage (L/N, L/PE, N/PE)
- Protective effect provided by a varistor combined with spark gap
- Optical signalization state of overvoltage protection:

  - basic version – a green indicator signals OK function
  - inverse version (I) – a red indicator signals OUT / faulty



TECHNICAL PARAMETERS

Type			new series
Max. operation voltage	U_c	280 V AC	280 V AC
Nominal voltage	U_n	230 V AC	230 V AC
Nominal discharge current (8/20)	I_n	2,5 kA	-
Max. discharge current (8/20)	I_{max}	5 kA	-
Open circuit voltage	U_{oc}	4 kV	3 kV
Voltage protection level at 5 kA (8/20)			
L-N	U_P	≤1,5 kV	≤0,9 kV
L-PE	U_P	≤1,5 kV	≤1,5 kV
L/N	U_P	≤1,2 kV	≤1,2 kV
Response time			
L/N	t_A	< 25 ns	
L(N)/PE	t_A	< 100 ns	
Prospective short-circuit current of a power supply	I_p	6 kA_{ef}	
Overcurrent protection		≤16 A with disconnection chars. B, C, D	
Status indication of TDD (Thermic Disconnecting Device)		green (OK) or red (OUT)	
Products comply with norms EN 61643-11 IEC 61643-1 VDE 0675-06		type 3 T3 class III Klasse D	

Tango® sockets

ZPO D1B-TA ZPO D2B-TA ZPO D ATA1 iS-3kV ZPO D ATA2 iS-3kV

Classic sockets

ZPO D11-CL ZPO D21-CL ZPOI D11-CL ZPOI D21-CL

Mosaic sockets

ZPO D LMO1 iS-3kV ZPO D LMO1 iS-3kV

*Tango® is ABB, Ltd. companies registered trademark

PRODUCT SPECIFICATION

ZPO D [ ][ ][ ][ ] - [ ] - U_{oc} open circuit voltage

- iS - status indication - red (OUT)
- zS - status indication - green (OK)
- number of socket
- socket type
- producer
- type of SPD

Type	Order No.
ZPO D1M/74111-MOSAIC	92.011
ZPO D1M/74114-MOSAIC	92.012

Type - new series	Order No.
ZPO D LMO1 iS-3kV white	92.162/20
ZPO D LMO1 iS-3kV red	92.162/10
ZPO D ATA1 iS-3kV white	92.166/10
ZPO D ATA2 iS-3kV white	92.164/10
ZPO D LMI1 zS-4kV white	92.165/10

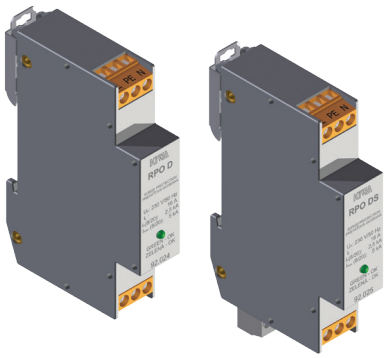
Type	Order No.
ZPO D1B - TA, without box	92.005
ZPO D2B - TA	92.008
ZPO D11 - CL	92.035
ZPOI D1B - TA	92.069
ZPOI D2B - TA	92.070
ZPOI D11 - CL	92.071
ZPOI D21 - CL	92.072
ZPO D2R - TA	92.094
ZPOI D1R - TA	92.098
ZPOI D1 - TA	92.110
ZPOI D2R - TA	92.116

Other overvoltage protection sockets on demand kiwa@kiwa.sk

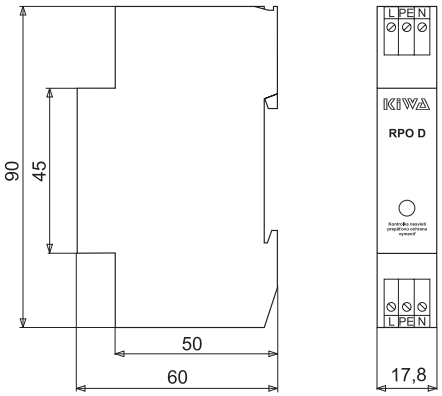
DISTRIBUTION BOX OVERVOLTAGE PROTECTION

RPO D, RPO DS

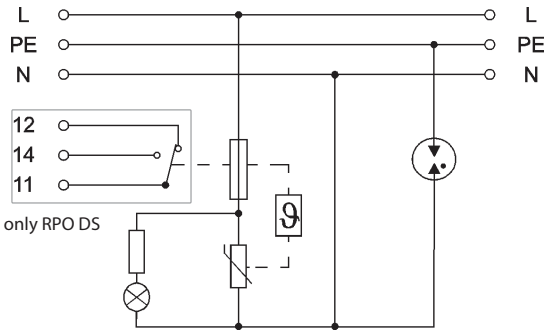
- Usage as 3rd level (T3 , fine protection) in 3-level overvoltage protection concept
- It decreases overvoltage and reduces overvoltage wave energy caused by induction and switching processes in the connected low voltage network
- Installation on 35 mm DIN rail
- Protection against the transverse and longitudinal overvoltage (L/N, L/PE, N/PE)
- Protective effect provided by a varistor combined with spark gap
- Optical and remote signalling of operation state



DIMENSIONS



CONNECTION DIAGRAM



TECHNICAL PARAMETERS

TYPE		230 V AC	115 V AC	48 V AC/DC	24 V AC/DC	12 V AC/DC
Max. operation voltage	U_c	280 V AC	115 V AC	48 V AC/DC	24 V AC/DC	12 V AC/DC
Nominal voltage	U_n	230 V AC	115 V AC	48 V AC/DC	24 V AC/DC	12 V AC/DC
Rated load current	I_L	16 A	16 A	16 A	16 A	16 A
Nominal discharge current (8/20)	I_n	2,5 kA	2,5 kA	2,5 kA	1 kA	1 kA
Maximum discharge current (8/20)	I_{max}	5 kA	5 kA	5 kA	2 kA	2 kA
Open circuit voltage	U_{oc}	4 kV	4 kV	4 kV	4 kV	4 kV
Voltage protection level at I_{max}						
L(N)/PE	U_p	≤1,5 kV	≤0,8 kV	≤1,1 kV	≤0,8 kV	≤0,8 kV
L/N	U_p	≤1,2 kV	≤0,7 kV	≤0,4 kV	≤0,2 kV	≤0,12 kV
Response time						
L/N	t_A	< 25 ns				
L(N)/PE	t_A	< 100 ns				
Prospective short-circuit current of a power supply	I_p	6 kA_{ef}				
Overcurrent protection gL/gG		≤16 A with disconnection characteristic B, C, D				
Status indication of TDD (Thermic Disconnecting Device)		green (OK)				
Mounting on profiled DIN rail		35 x 7,5 mm				

PRODUCT SPECIFICATION

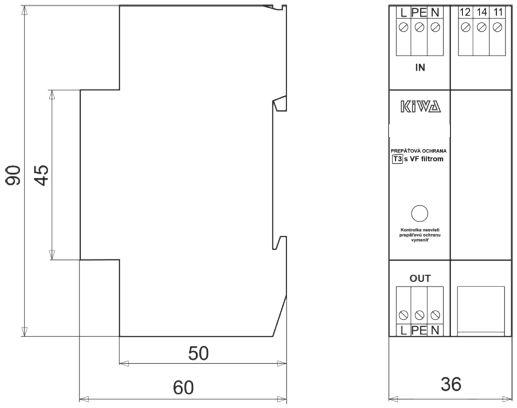
TYPE	Order number				
	230 V AC	115 V AC	48 V AC/DC	24 V AC/DC	12 V AC/DC
RPO D	92.024	92.081	92.083	92.082	92.160
RPO DS	92.025	92.084	92.086	92.085	92.161

DISTRIBUTION BOX OVERVOLTAGE PROTECTION with HF filter

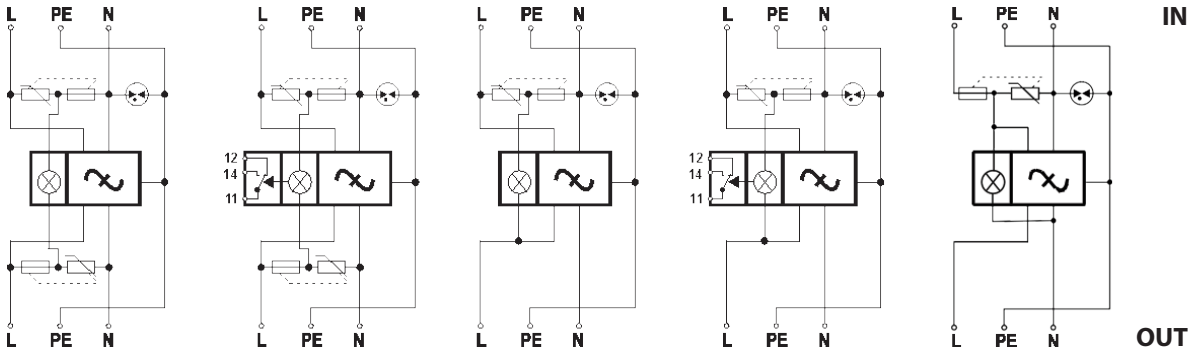
RPOD F 6, RPOD F 16, RPOD F 6-L, RPOD F 16-L and RPOD F 16-LI

- Usage as 3rd level (T3 , fine protection) in 3-level overvoltage protection concept
- It decreases overvoltage and reduces overvoltage wave energy caused by induction and switching processes in the connected low voltage network
- Prevents propagation of HF disturbances
- Installation on 35 mm DIN rail
- Protection against the transverse and longitudinal overvoltage (L/N, L/PE, N/PE)
- Protective effect provided by a varistor in combined with spark gap
- Integrated HF filter
- Optical and remote signalling of operation state

DIMENSIONS



CONNECTION DIAGRAM



RPOD F 6
RPOD F 16

RPOD R F 6
RPOD R F 16

RPOD F 6-L
RPOD F 16-L

RPOD R F 6-L
RPOD R F 16-L

RPOD F 16-LI

TECHNICAL PARAMETERS

TYPE	RPOD F 6	RPOD R F 6	RPOD F 16	RPOD R F 16	RPOD F 6-L	RPOD R F 6-L	RPOD F 16-L	RPOD R F 16-L	RPOD F 16-LI
Nominal voltage U_n	230 V AC		230 V AC		230 V AC		230 V AC		230 V AC
Rated load current I_L	6 A		16 A		6 A		16 A		16 A
Max. operating voltage U_c	255 V AC		255 V AC		255 V AC		255 V AC		255 V AC
Open circuit voltage U_{oc}	4 kV		4 kV		4 kV		4 kV		4 kV
Voltage protection level U_P									
L/N	0,9 kV		0,9 kV		1,2 kV		1,2 kV		1,2 kV
N/PE	1,2 kV		1,2 kV		1,2 kV		1,2 kV		1,2 kV
L/PE	1,5 kV		1,5 kV		1,5 kV		1,5 kV		1,5 kV
Response time t_A									
L/N	<25 ns		<25 ns		<25 ns		<25 ns		<25 ns
L/PE, N/PE	<100 ns		<100 ns		<100 ns		<100 ns		<100 ns
Residual current I_{PE}	<1 mA		<1 mA		<1 mA		<1 mA		<1 mA
Overcurrent protection (fuse gG/circuit breaker B, C, D)	≤ 6 A		≤ 16 A		≤ 6 A		≤ 16 A		≤ 16 A
Prospective short-circuit current of a power supply I_p	6 kA_{ef}		6 kA_{ef}		6 kA_{ef}		6 kA_{ef}		6 kA_{ef}
Filter attenuation symmetric 0,8 - 30 MHz	> 40 dB		> 40 dB		> 40 dB		> 40 dB		> 40 dB
Filter attenuation asymmetric 3 - 30 MHz	> 40 dB		> 40 dB		> 40 dB		> 40 dB		> 40 dB
Connecting conductor cross section	0,5 ... 2,5 mm^2		0,5 ... 2,5 mm^2		0,5 ... 2,5 mm^2		0,5 ... 2,5 mm^2		0,5 ... 2,5 mm^2
Signalling changeover contact	-	max. 250VAC 3 mA ... .. 1 A	-	max. 250VAC 3 mA ... .. 1 A	-	max. 250VAC 3 mA ... .. 1 A	-	max. 250VAC 3 mA ... .. 1 A	-
Degree of protection	IP 20								
Status indication of TDD (Thermic Disconnecting Device)	green (OK)								
Dimensions	90 x 60 x 36 mm								
Mounting on profiled DIN rail	35 x 7,5 mm								
Product comply with norms EN 61643-11 IEC 61643-1 VDE 0675-06	type 3 T3 Class III Klasse D								

PRODUCT SPECIFICATION

RPOD R F 6 -

- L - version without overvoltage protection on the output,
  LI - version, provides simultaneous disconnection of TDD and switch of the output voltage (phase conductor)
- Rated load current I_L
- F - filter
- R - remote signalling
- type SPD

TYPE	Order number
RPOD F 16	92.042
RPOD R F 16	92.043
RPOD F 6	92.136
RPOD R F 6	92.137

TYPE	Order number
RPOD F 16-L	92.142
RPOD R F 16-L	92.143
RPOD F 6-L	92.144
RPOD R F 6-L	92.145

TYPE	Order number
RPOD F 16-LI	92.159

OVERVOLTAGE PROTECTION FOR INSTRUMENTATION AND CONTROL

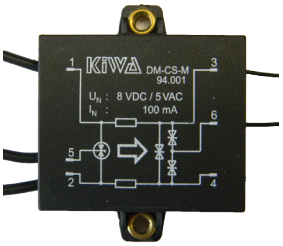
Overvoltage protectors class **DM** (for instrumentation and control) and **DN** (for power supply) are intended for protection of data input of devices in measuring and regulating systems, which in general are extremly sensitive to overvoltage damage.

KIWA SPDs for instrumentation and control are characterized by

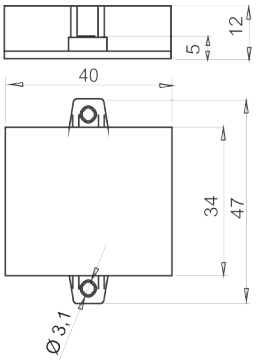
- a high diverting capacity up to 20 kA (8/20) according to the type,
- a high suppression efficiency of overvoltage events,
- simple installation,
- long operational life.

Two basic versions available:

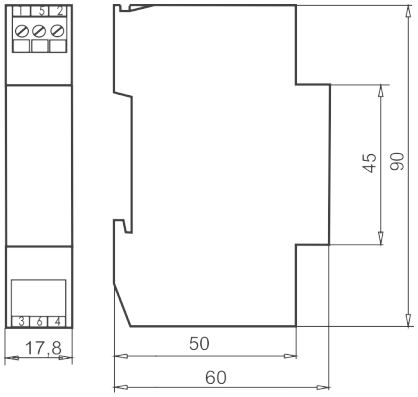
R - distributor panel
M - modular



DIMENSIONS



DM-xx-M

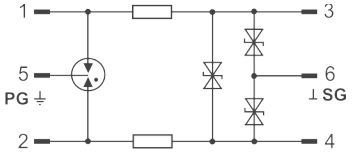


DM-xxx-R
DN-xxx-R

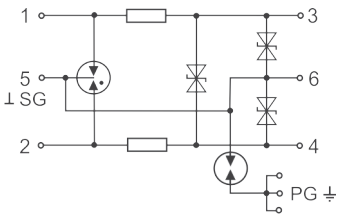
CONNECTION DIAGRAM

The 2-level
CS, CC protectors. The separation between levels is realized by inductance-free resistors. The application area is protection of analogue circuits operating at a frequency of up to 3 MHz and digital circuits with transfer rate up to 1.5 MBit/s. Diverting ability reaches a value of 10 kA (8/20).

CS

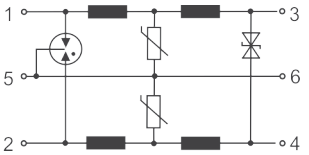


CC

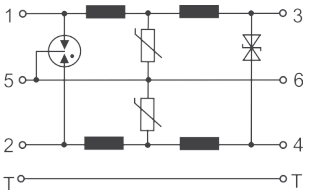


The 3-level
BS, BA.. protectors. The separation between levels is realized by chokes. The application area is protection of analogue signals with low frequency, circuits with current loops (0/4 - 20 mA) and two-state (ON/OFF) signals. With respect tot he low transfer resistance, they are also suitable to protect AC, DC supply distributions.

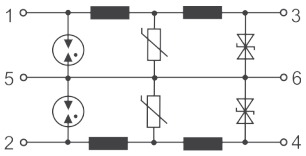
BS



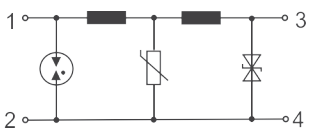
BST



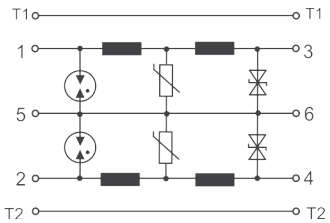
BA



BA1



BAT



TECHNICAL PARAMETERS

Connection diagram: **BS, BST**

Nominal voltage	U_n	8 V	12 V	16 V	24 V	48 V
Max. operating voltage	U_c	1,15. U_n				
Rated loated current	I_L					
DN class		1 A				
DM class		100 mA				
Nominal discharge current (8/20)	I_n	10 kA				
Max. discharge current (8/20)	I_{max}	20 kA				
Voltage protection level for I_{max}	U_p					
line / line		≤ 15 V	≤ 30 V	≤ 40 V	≤ 50 V	≤ 92 V
line / signal earth		≤ 80 V	≤ 110 V	≤ 120 V	≤ 260 V	≤ 480 V
Response time	t_A					
line / line		≤ 1 ns	≤ 1 ns	≤ 1 ns	≤ 1 ns	≤ 1 ns
line / signal earth		≤ 25 ns	≤ 25 ns	≤ 25 ns	≤ 25 ns	≤ 25 ns
Cut-off frequency	f_o					
DN class		70 kHz				
DM class		100 kHz				
Serial impedance / line	L, R					
DN class		max. 250 µH / max. 2 Ω				
DM class		max. 150 µH / max. 1 Ω				
Operating temperature range		-25°C ... +80°C				
Connection		input/output: terminal for 0,5 - 2,5 mm² wire				

Connection diagram: **CS, CC**

Nominal voltage	U_n	8 V=/ 5 V~	12 V=/ 8 V~	16 V= / 11 V~	24 V= / 17 V~	48 V=/ 34 V~
Max. operating voltage	U_c	1,15. U_n				
Rated loated current	I_L	100 mA				
Nominal discharge current (8/20)	I_n	5 kA				
Max. discharge current (8/20)	I_{max}	10 kA				
Voltage protection level for I_{max}	U_p					
line / line		15 V	≤ 23 V	≤ 45 V	≤ 36 V	≤ 72 V
line / signal earth		15 V	≤ 23 V	≤ 25 V	≤ 36 V	≤ 72 V
Voltage protection level for 1 kV/µs	U_{sp}					
line / protected earth		≤ 450 V				
Response time	t_A					
line / line		≤ 1 ns				
line / signal earth		≤ 1 ns				
line (sign.earth) /protected earth		≤ 100 ns				
Cut-off frequency/ baud rate	f_o	3 MHz / 1,5 MBit/s				
Longitudinal impedance / line	R_L	max. 10 Ω				
Operating temperature range		-25°C ... +80°C				
Connection						
R version		input/output: terminal for 0,5 - 2,5 mm² wire				
M version		input: 0,5 mm² cable, 100 mm long				
		output: 0,2 mm² wire, 100 mm long				

Connection diagram: **BA, BA1, BAT**

Nominal voltage	U_n	8 V	12 V	16 V	24 V	48 V
Max. operating voltage	U_c	1,15. U_n				
Rated load current	I_L					
	DN class	1 A				
	DM class	100 mA				
Nominal discharge current (8/20)	I_n	10 kA				
Max. discharge current (8/20)	I_{max}	20 kA				
Voltage protection level for I_{max}	U_p					
line / sign. earth		≤ 13 V	≤ 19 V	≤ 21 V	≤ 33 V	≤ 72 V
line / line		≤ 26 V	≤ 38 V	≤ 42 V	≤ 66 V	≤ 144 V
Response time	t_A					
line / sign. earth		≤ 1 ns				
Cut-off frequency	f_o					
	DN class	70 kHz				
	DM class	100 kHz				
Serial impedance / line	L, R					
	DN class	max. 250 µH / max. 2 Ω				
	DM class	max. 150 µH / max. 1 Ω				
Operating temperature range		-25°C ... +80°C				
Connection		input/output: terminal for 0,5 - 2,5 mm² wire				

PRODUCT SPECIFICATION

D - □ - □ / □ — Nominal voltage (V)

version: R - on a DIN35 (distributor) rail or M - modular

type of product - (**BS, BST, CS, CC, BA, BA1, BAT**) corresponding to connection diagram

class of overvoltage protection (**M** - instrumentation and control 0,1A, or **N** - supply 1A)

TYPE	Order number				
	8 V	12 V	16 V	24 V	48 V
DM-BS-R				94.038	
DN-BS-R			94.013	94.023	
DM-BST-R				94.031	
DN-BST-R				94.050	
DM-CS-M	94.001	94.016		94.018	94.040
DM-CS-R	94.002	94.017		94.019	94.034
DM-CC-R	94.022		94.035	94.057	
DM-BA-R		94.043	94.045	94.033	94.032
DN-BA-R		94.044		94.039	94.066
DM-BA1- R	94.063	94.065		94.046	
DN-BA1-R		94.064	94.010	94.048	
DM-BAT-R				94.047	
DN-BAT-R				94.036	

OVERVOLTAGE PROTECTION FOR INSTRUMENTATION AND CONTROL

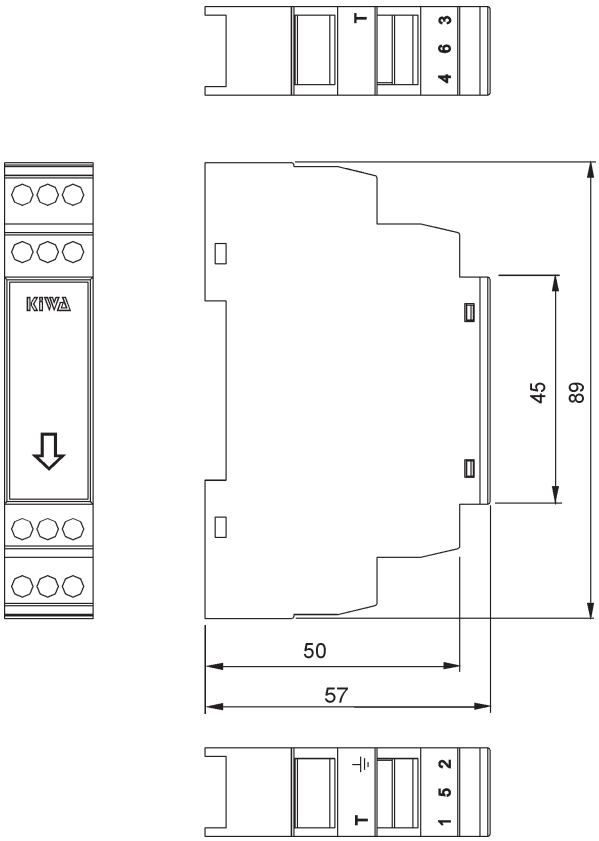
DM-CCT-R

It is used as a protection of appliances against the overvoltage, which is propagating through data and communication lines. It enables the protection of two wires lines or of two one wire lines (symmetrical or asymmetrical systems). It is commonly used in the area of measuring, controlling, and the area of digital and analogue information transmission equipment.

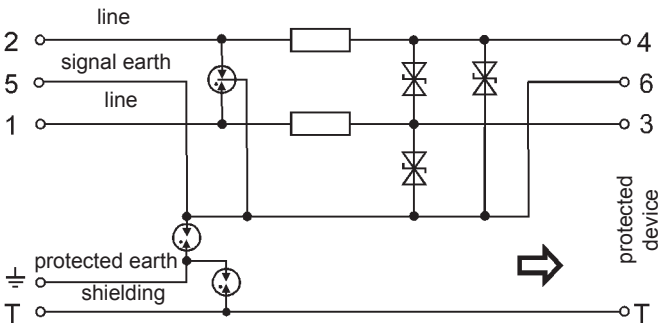
The SPD has been created as the two-stage system with the stepwise overvoltage reduction down to allowable values. In the first stage are used the efficient spark plugs while fast suppressing diodes are used in the second stage. The correct operation requests the proper connection according to this recomandation, respecting connecting diagram as it is printed on the housing.

The SPD is encased in the plastic housing designed for mounting on DIN 35 rail.

DIMENSIONS



CONNECTION DIAGRAM



TECHNICAL PARAMETERS

Nominal voltage	U_n	8 V=	12 V=	16 V=	24 V=	48 V=
Max. operating voltage	U_c	1,15. U_n				
Rated load current	I_L	100 mA				
Nominal discharge current (8/20)	I_n	5 kA				
Max. discharge current (8/20)	I_{max}	10 kA				
Max. discharge current (10/350)	I_{max}	2,5 kA				
Voltage protection level for I_{max}	U_p					
line / line		25 V	≤ 23 V	≤ 29 V	≤ 36 V	≤ 72 V
line / sign. earth		15 V	≤ 23 V	≤ 29 V	≤ 36 V	≤ 72 V
Voltage protection level for 1 kV/µs						
line / protection earth		≤ 450 V				
sign. earth /protection earth						
Response time	t_A					
line / line		≤ 1 ns				
line / sign. earth		≤ 1 ns				
line / protection earth		≤ 100 ns				
sign. earth / protection earth		≤ 100 ns				
shielding / protection earth		≤ 100 ns				
Limit frequency / baud rate	f_o	3 MHz / 1,5 MBit/s				
Imput resistance (line / sig. earth)	R_V	≤ 1 MΩ				
Longitudinal impedance / line	R_L	max. 10 Ω				
Operating temperature range		-25 °C ... +80 °C				
Connection		input/output: terminal for cable 0,5 - 2,5 mm²; wire 0,2 - 4 mm²				
Products comply with norms IEC 61643-21		C2; D1				

PRODUCT SPECIFICATION

D □ - □□ - □ / □ —— nominal voltage (V)

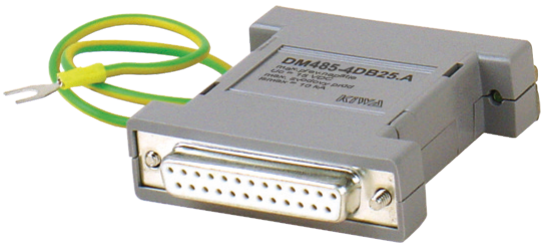
version: R - on a DIN35 (distributor) rail

type of product - (**CCT**) corresponding to connection diagram

class of overvoltage protection (**M** - instrumentation and control 0,1A)

TYPE	Order number				
	8 V	12 V	16 V	24 V	48 V
DM-CCT-R	94.058	94.059	94.060	94.061	94.062

DM485-4DB25



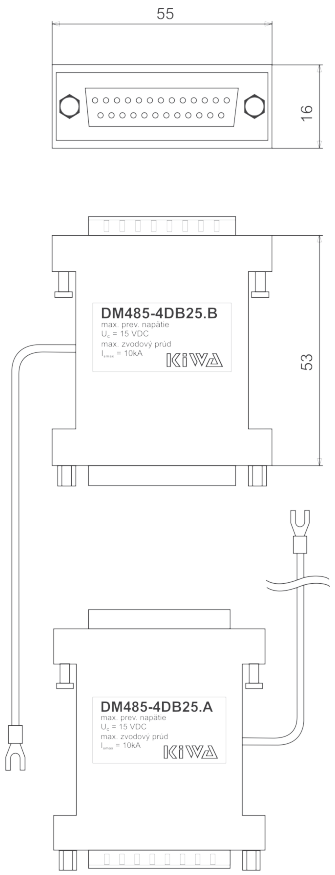
The DM485-4DB25 overvoltage protection module is designed to protect the of electronical equipment using the RS-485 and RS-422 data interface. The module is suitable for use in lightning protection zone LPZ 1 (within buildings)

The protective effect of overvoltage module is achieved by the combination of coarse and fine overvoltage protection. The coarse protection is provided by spark gaps, fine protection by a circuit with fast suppression diodes. It protects against symmetrical and asymmetrical overvoltage surges (between wires / wires and the earth).

The module is equipped with a D-SUB25 junction connectors. The connection of the module is realised straight to the input connector of protected interface, or is connected to it with short connecting cable.

The condition for achievement of the full protective effect is to connect the green-yellow conductor of the module to the source of earth potential. In case that the protected equipment is a device of class I, then the fully complying source of the earth potential is the frame of equipment. In case that the protected equipment is a device class II or class III, then the green-yellow conductor shall be connected to the earth rail of the equipotential distribution of the building or to the PE (PEN) rail of the main distribution.

DIMENSIONS



TECHNICAL PARAMETERS

Nominal discharge current (8/20)		
line - line, line - GND	I_n	2,5 kA
PE - GND	I_n	2,5 kA
Max. discharge current (8/20)		
line - line, line - GDN	I_{max}	5 kA
PE - GDN	I_{max}	5 kA
lines together - GDN	I_{max}	10 kA
Nominal voltage	U_n	12 V=
Max. operating voltage	U_c	15 V=
Voltage protection level (at I_{max})		
line - line, line - GND	U_p	≤ 35 V
PE - GDN	U_p	≤ 650 V
Inserted impedance		10 Ω
Baud rate		10 Mbit/s
Response time	t_A	≤ 1 ns

CONNECTION

DM485-4DB25.A		DM485-4DB25.B	
input	output	input	output
D-Sub25F	D-Sub25M	D-Sub25M	D-Sub25F

Protection earth	30 cm yellow-green wire with M4 forked terminal*
protected lines	1, 2, 3, 4

* alternative lenghts of wire, or alternative terminals on demand

PRODUCT SPECIFICATION

TYPE	Order number
DM485-4DB25.A	94.020
DM485-4DB25.B	94.021

OVERVOLTAGE PROTECTION for Ethernet 100BaseT network

DME100TX-4RJ, DME100TX-4RJ-R

Protection of data inputs for LAN Ethernet 100BaseT site devices in lightning protection zone LPZ 1 (inside buildings). The full protective effects are only achieved with correct earthing of the overvoltage protection.

The DME100T protection modules are connected between the equipment to be protected (workstation, server, HUB,...)and the unprotected network. Due to their small size, they can be fitted directly onto the protected equipment. The advantage of such installation is that there is no need to install a connection of earthing wire as this function is provided by the frame of the protected equipment.

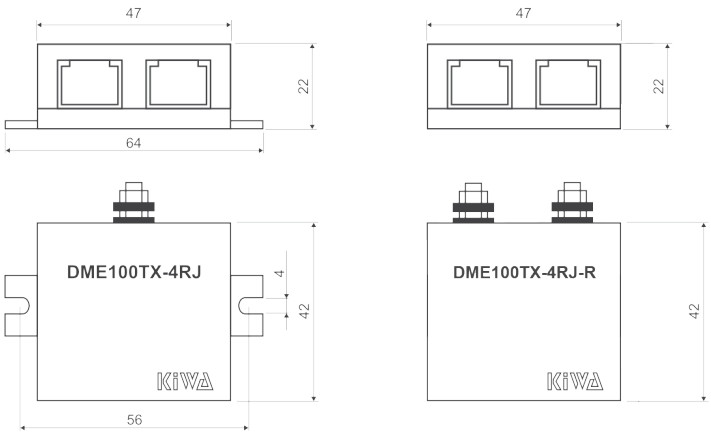
DME100TX-4RJ

is SPD module for protection of the computer network 100BaseT. It protects 2 pairs of wires. It is equipped with two RJ45 connectors, which are interchangeable - each connector can act as input or output. The unprotected output of LAN shall be connected with a patch cable to one connector of the module, and the second connector is connected with cable to the input of the protected device.

DME100TX-4RJ-R is a surge protector designed for DIN rail mounting. The potential PE is connected via the DIN rail holder which is connected to the PE.

Fine one-stage protection. The protection effect provides the circuit combining suppressor diodes and avalanche diodes. It also provides protection against symmetrical and asymmetrical overvoltage surges (between individual wires / wires and the earth).

DIMENSIONS



TECHNICAL PARAMETERS

Nominal discharge current (8/20)		
line - line	I_n	300 A
line - earth	I_n	300 A
shielding - earth	I_n	1 kA
Max. discharge current (8/20)		
line - line	I_{max}	350 A
line - earth	I_{max}	350 A
shielding - earth	I_{max}	2 kA
Nominal voltage	U_n	5 V DC
Max. operating voltage	U_c	7 V DC
Voltage protection level (at I_{max})		
line - line, line - earth	U_p	≤ 45 V
shielding - earth	U_p	≤ 600 V
Insered impedance		-
Baud rate		100 Mbit/s
Response time	t_A	≤ 1 ns

CONNECTION

input	RJ45 connector
output	RJ45 connector
protection earth	M4 screw
protected wires	2 pairs of wires, line 1, 2, 3, 6 *

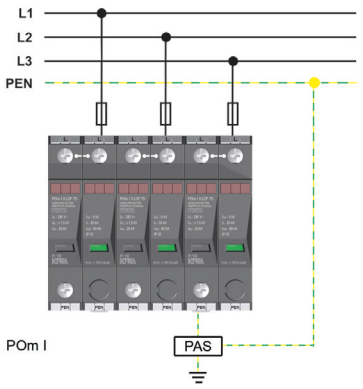
* other lines are not connected

PRODUCT SPECIFICATION

TYPE	Order number
DME100TX-4RJ	94.007
DME100TX-4RJ-R	94.042

EXAMPLES OF INSTALLATION:

TN-C



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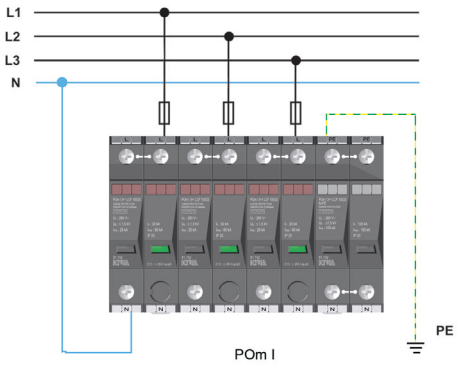
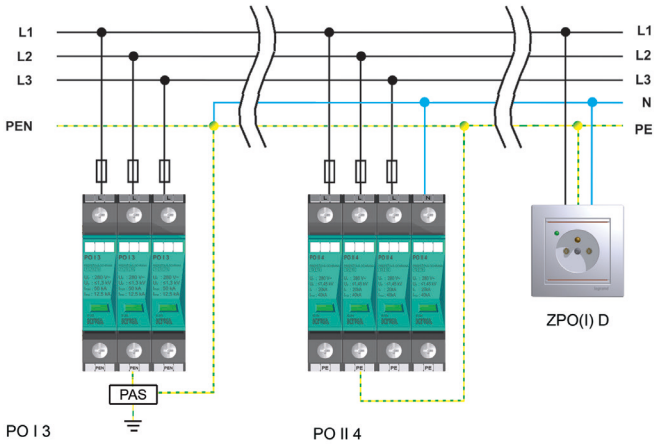


TN-C-S



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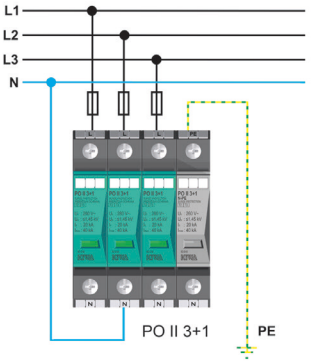
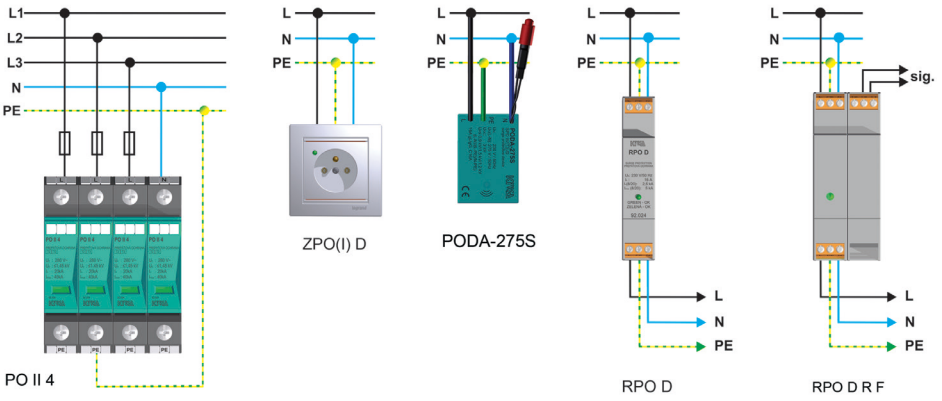
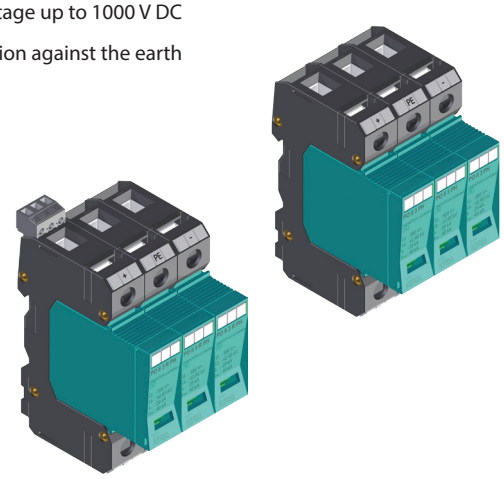


TN-S

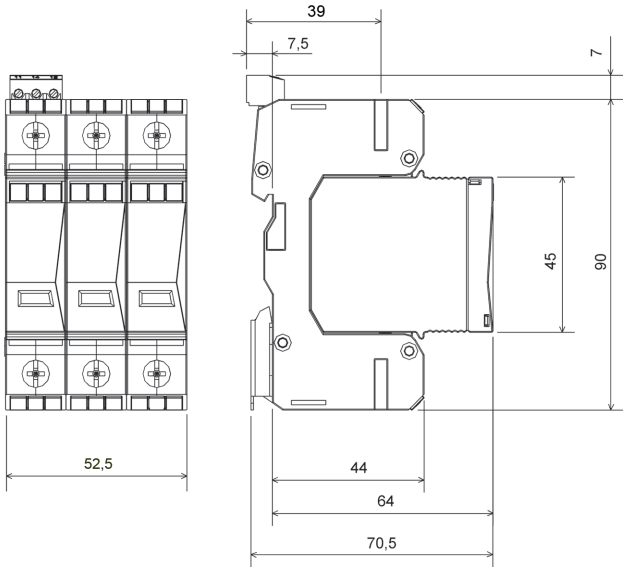


PO II 3 PH

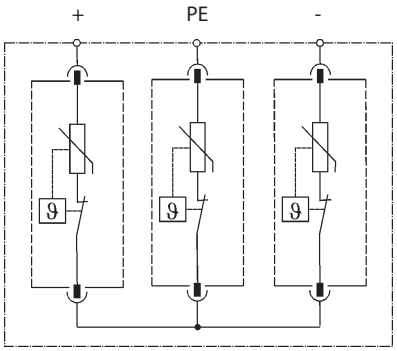
- For protection of DC circuit photovoltaic systems with operating voltage up to 1000 V DC
- 3-pole protection with enhanced withstand against failure of insulation against the earth
- Plug-in protectives modules
- Varistor modules for protection against overvoltage
- Optical signalization of operation state
- Remote signalization of operation state (R version)
- Protective modules rotable with respect to the base through 180°
- Multifunctional terminals for conductors and bus bars



DIMENSIONS

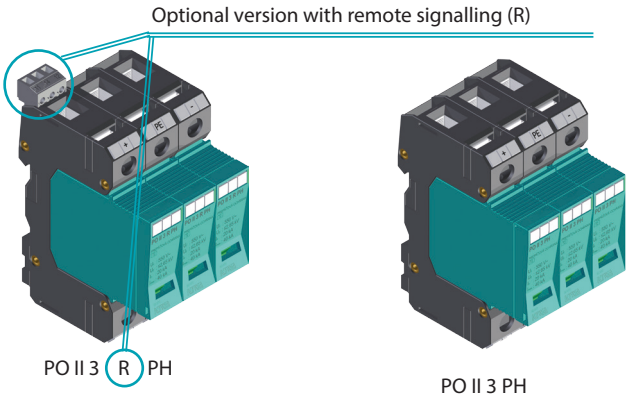


CONNECTION DIAGRAM



PO II 3 PH

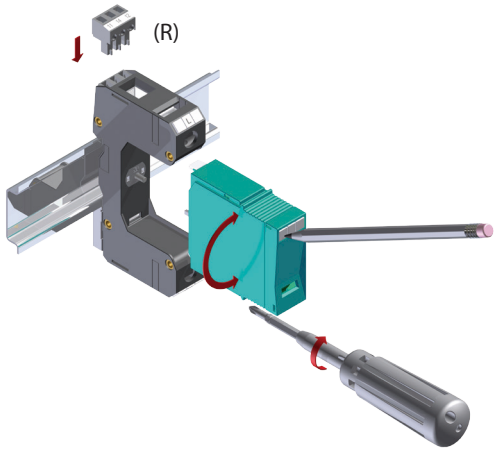
R VERSION



Each product's modification containing varistor module, can be supplied with remote signalling system to identify a state of overvoltage protection device.

INSTALLATION

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



TECHNICAL PARAMETERS

KIWA	TYPE	PO II 3 PH	PO II 3 PH
Number of poles		3	3
Max. operating voltage T2	U_{cPV}	600 V=	1000 V=
Nominal discharge current (8/20) T2	I_n	20 kA	20 kA
Max. discharge current (8/20) T2	I_{max}	40 kA	40 kA
Voltage protection level at 5 kA (8/20)	U_p		
	L+/L-	2,6 kV	4 kV
	L+-/PE	2,6 kV	4 kV
Response time	t_A	<25 ns	<25 ns
	L+/L-		
	L+-/PE		
Prospective short-circuit current of a power supply	I_P	25 kA_{ef}	25 kA_{ef}
Overcurrent protection gL/gG		≤125 A	≤125 A
Operating temperature range		- 40 ... +70 °C	- 40 ... +70 °C
Degree of protection		IP 20	IP 20
Min. ... max. tightening torque		2 ... 3 Nm	2 ... 3 Nm
Status indication of TDD (Thermic Disconnecting Device)		green (OK) / red(OUT)	green (OK) / red(OUT)
Signalling changeover contact		M3/0.25 Nm,□ max. 1,5 mm^2, max. 250 V~/1 A	M3/0.25 Nm,□ max. 1,5 mm^2, max. 250 V~/1 A
Connecting conductor cross section	- wire	4 ... 35 mm^2	4 ... 35 mm^2
	- cord	4 ... 25 mm^2	4 ... 25 mm^2
Mounting on profiled DIN rail		35 x 7,5 mm	35 x 7,5 mm
Dimensions		97 x 64 x 52,5 mm	97 x 64 x 52,5 mm
Products comply with norms EN 61643-11 IEC 61643-1 VDE 0675-06		type 2 T2 Class II Klasse C	type 2 T2 Class II Klasse C

PRODUCT SPECIFICATION

PO II | 3 | | PH | 1000 V DC / 40 kA

- 1000 V DC / 40 kA — U_{cPV} / I_{max}
- PH — PH - photovoltaic
- (blank) — R - remote signalling
- 3 — number of poles
- PO II — type SPD

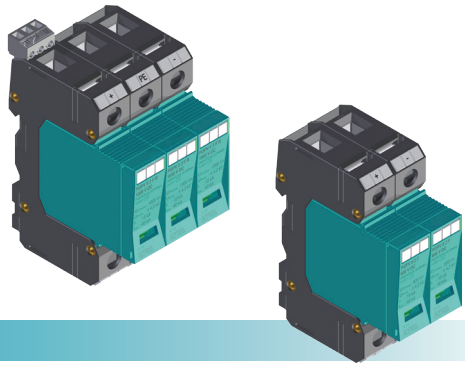
TYPE	Order number
PO II 3 PH 1000 V DC/40 kA	82.072
PO II 3 R PH 1000 V DC/40 kA	82.073
PO II 0 PH 1000 V DC/40 kA	82.141
PO II 3 PH 600 V DC/40 kA	82.113
PO II 3 R PH 600 V DC/40 kA	82.114
PO II 0 PH 600VDC/40kA	82.142

Execute bellow operating voltage made-to-order.

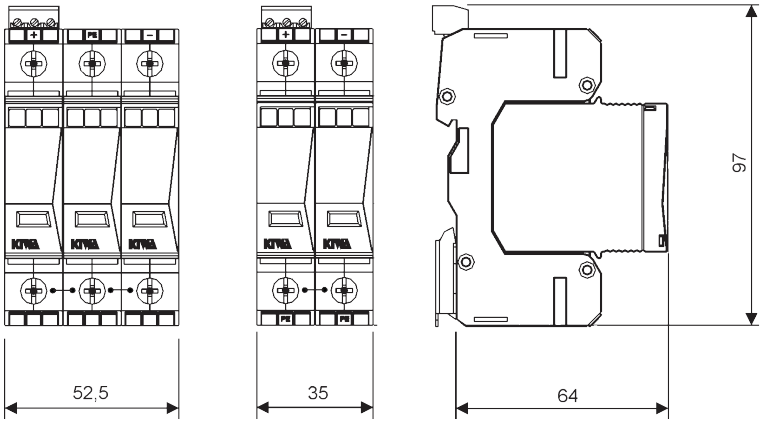
POPV II 3 F 1000VDC
POPV II 2 F 600VDC

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 1000 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 rotable with respect to the base through 180°



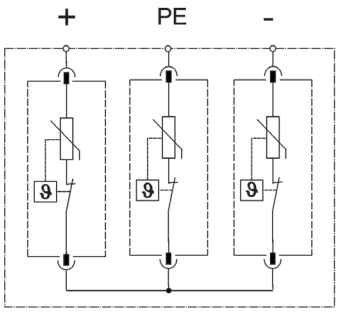
DIMENSIONS



POPV II 3 F R 1000VDC

POPV II 2 F R 600VDC

CONNECTION DIAGRAM



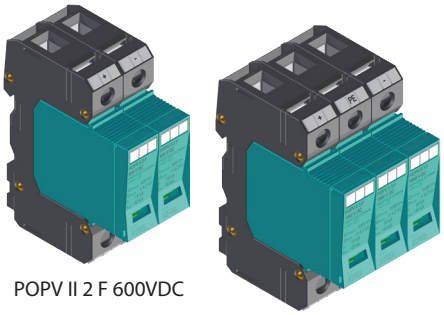
POPV II 3 F 1000VDC

BASIC VERSION

Signalling states:

green = OK

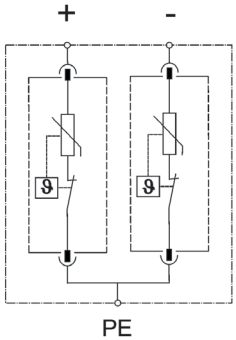
red = out of operation,
to be replaced immediately



POPV II 2 F 600VDC

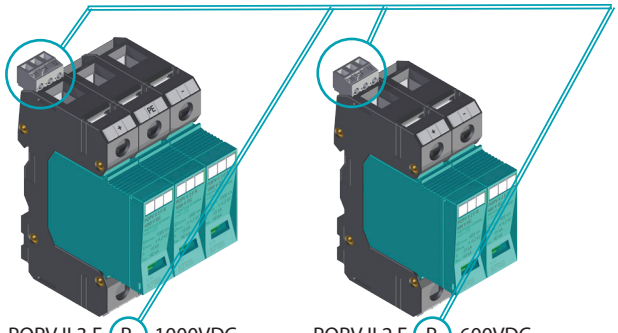
POPV II 3 F 1000VDC

R VERSION



POPV II 2 F 600VDC

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

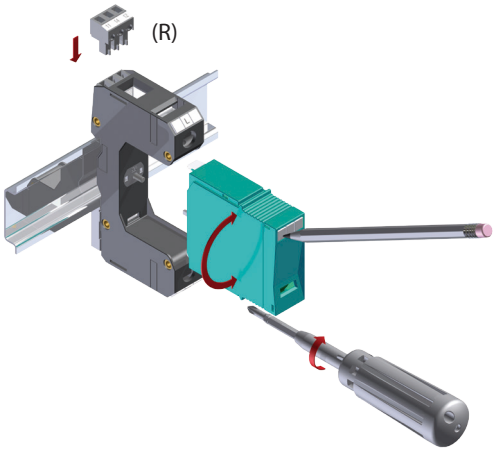


POPV II 3 F (R) 1000VDC

POPV II 2 F (R) 600VDC

INSTALLATION

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



TECHNICAL PARAMETERS

TYPE		POPV II 3 F 1000 V DC	POPV II 2 F 600 V DC
Number of poles		3	2
Max. operating voltage	U_{CPV}	1000 V=	600 V=
Voltage protection level at	U_p		
	L+/L-	≤ 4,2 kV	≤ 4,2 kV
	L+L-/PE	≤ 4,2 kV	≤ 2,65 kV
Response time t_A			
	L+/L-	< 25 ns	< 25 ns
	L+L-/PE	< 25 ns	< 25 ns
Nominal discharge current (8/20)	I_n	15 kA	15 kA
Max. discharge current (8/20)	I_{max}	40 kA	40 kA
Short-circuit withstand	I_{SCWPV}	200 A	200 A
Signalling changeover contact		M3/0.25 Nm, □0,2 ... 1,5 mm^2, max. 250 V~/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 ... +70 °C	
Degree of protection		IP 20	
Dimensions		97 x 64 x 52,5 mm	97 x 64 x 35 mm
Mounting on profiled DIN rail		35 x 7,5 mm	
Products comply with norms UTE C 61-740-51		Class II	

PRODUCT SPECIFICATION

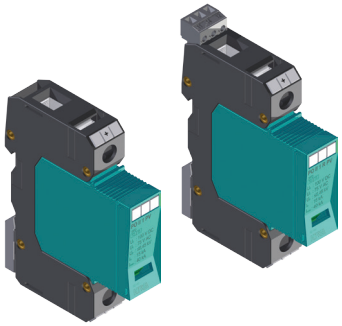
POPV II | 3 | F | R | 1000 V DC

- 1000 V DC → U_{CPV}
- R → R - remote signalling
- F → UTE C 61-740-51
- 3 → number of poles
- POPV II → type SPD

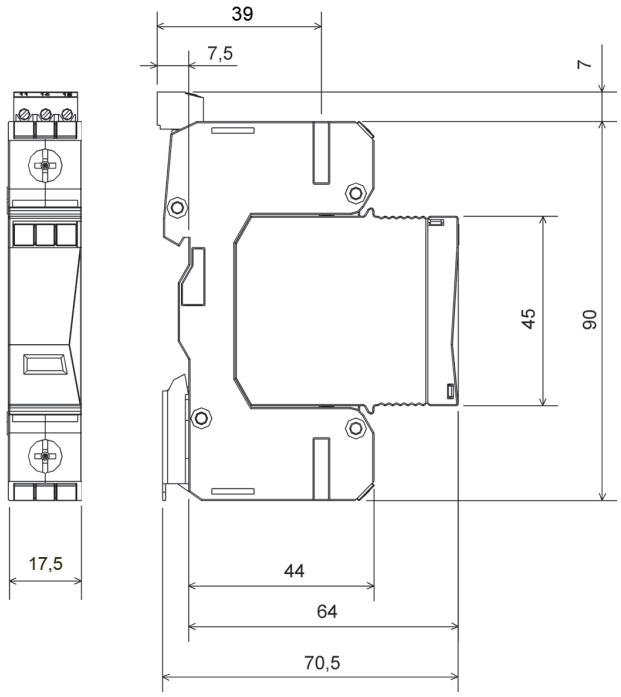
TYPE	Order number
POPV II 3 F 1000 V DC	82.107
POPV II 3 F R 1000 V DC	82.108
POPV II 0 F 1000 V DC	82.109
POPV II 2 F 600 V DC	82.125
POPV II 2 F R 600 V DC	82.126
POPV II 0 F 600 V DC	82.127

PO II 1 PV 100V DC

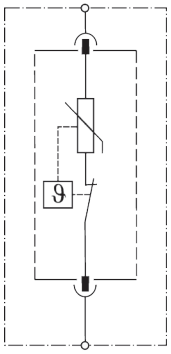
- For protection of DC circuit with operating voltage up to 100 V
- For protection of AC circuit with operating voltage up to 75 V
- Plug-in protectives modules
- Varistor modules for protection against overvoltage
- Optical signalization of operation state
- Remote signalization of operation state (R version)
- Protective modules rotable with respect to the base through 180°



DIMENSIONS

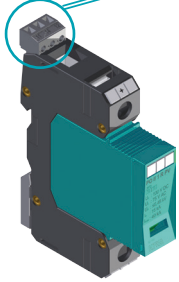


CONNECTION DIAGRAM



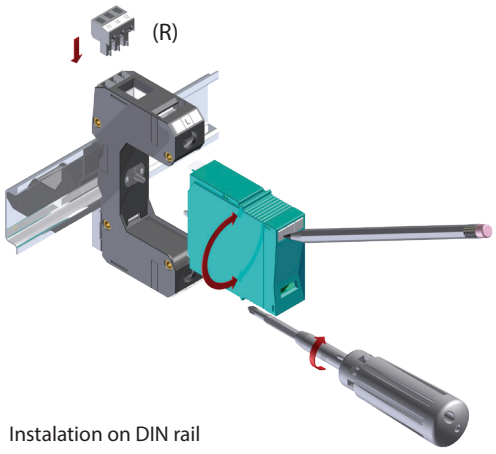
R VERSION

Optional version with remote signalling (R)



PO II 1 R PV 100V DC

INSTALLATION



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

TECHNICAL PARAMETERS

KIWA	TYPE	**PO II 1 PV 100VDC**
Number of poles		1
Max. operating voltage	U_c	75 V AC
Max. operating voltage	U_c	100 V DC
Max. discharge current (8/20)	I_{max}	40 kA
Nominal discharge current (8/20)	I_n	10 kA
Voltage protection level	U_p	≤ 0,4 kV
Voltage protection level at I_n = 20 kA	U_p	≤ 0,5 kV
Response time	t_A	< 25 ns
Open circuit voltage	U_{oc}	6 kV
Prospective short-circuit current of a power supply	I_p	25 kA_{ef}
Overcurrent protection gL/gG		≤ 125 A
Signalling changeover contact		M3/0.25 Nm, □ max. 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 ... +70 °C
Degree of protection		IP 20
Colour - plug-in varistor		turquoise blue, RAL 5018
- holder		black; RAL 9011
Dimensions		97 x 64 x 17,5 mm
Mounting on profiled DIN rail		35 x 7,5 mm
Products comply with norms	EN 61643-11 IEC 61643-1 VDE 0675-06	type 2 T2 + type 3 T3 Class II + Class III Klasse C + Klasse D

PRODUCT SPECIFICATION

PO II | 1 | | PV | 100V DC

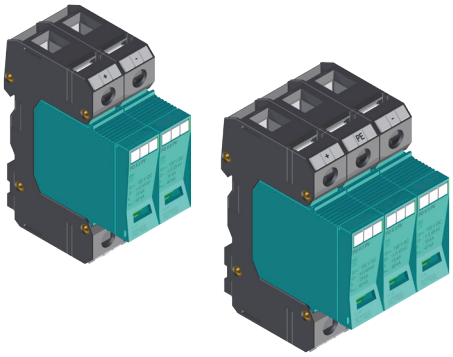
- 100V DC — Max. operating voltage U_c
- PV - possibility to use for photovoltaic systems
- R - remote signalling
- 1 — number of poles
- PO II — type SPD

TYPE	Order number
PO II 1 PV 100VDC	82.143
PO II 1 R PV 100VDC	82.144
PO II 0 PV 100VDC	82.145

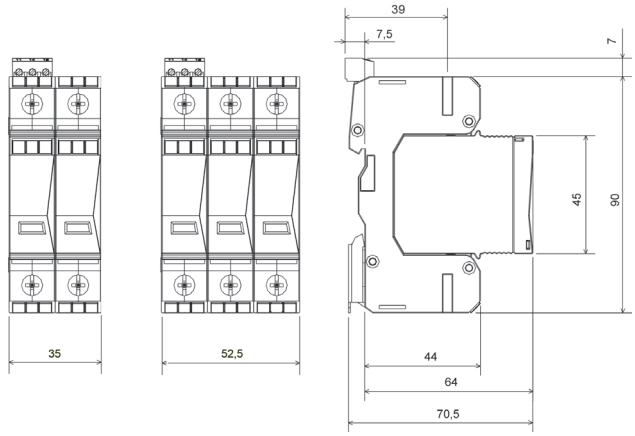
PO II 2 PV 100V DC
PO II 3 PV 200V DC

PO II PV are surge protective devices designed for application in area of photovoltaics systems.

- For protection of DC circuits of photovoltaic systems with operating voltage up to 200 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 rotable with respect to the base through 180°

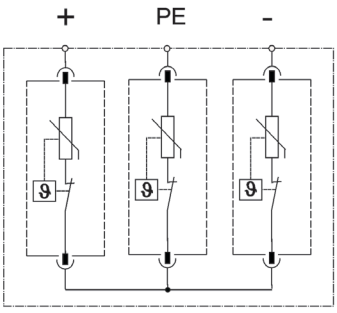


DIENSIONS

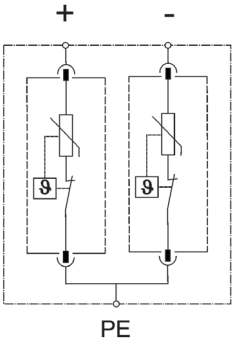


PO II 2 R PV 100V DC PO II 3 R PV 200V DC

CONNECTION DIAGRAM



PO II 3 PV 200V DC



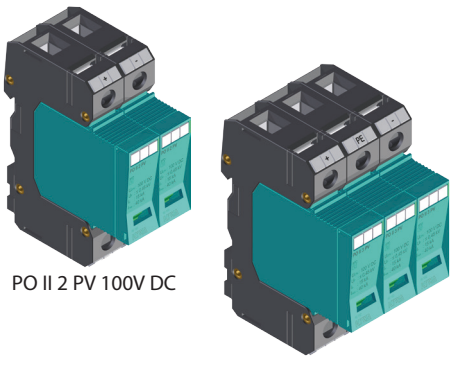
PO II 2 PV 100V DC

BASIC VERSION

Signalling states:

green = OK

red = out of operation,
to be replaced immediately

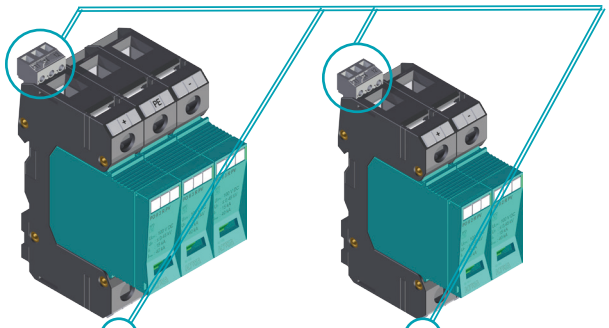


PO II 2 PV 100V DC

PO II 3 PV 200V DC

R VERSION

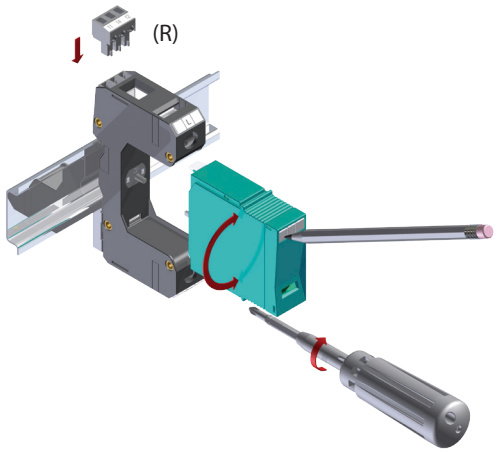
Optional version with remote signalling (R)
for the identification of the overvoltage protection state



PO II 3 R PV 200V DC PO II 2 R PV 100V DC

INSTALIATION

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



TECHNICAL PARAMETERS

TYPE		PO II 2 PV 100V DC	PO II 3 PV 200V DC
Number of poles		2	3
Max. operating voltage	U_{CPV}	100 V DC	200 V DC
Voltage protection level at	U_p		
	L+/L-	≤ 0,9 kV	≤ 0,9 kV
	L+L-/PE	≤ 0,45 kV	≤ 0,9 kV
Response time	t_A		
	L+/L-	< 25 ns	< 25 ns
	L+L-/PE	< 25 ns	< 25 ns
Nominal discharge current (8/20)	I_n	15 kA	15 kA
Max. discharge current (8/20)	I_{max}	40 kA	40 kA
Short-circuit withstand	I_{SCWPV}	200 A	200 A
Signalling changeover contact		M3/0.25 Nm, □0,2 ... 1,5 mm^2, max. 250 V~/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 ... +70 °C	
Degree of protection		IP 20	
Dimensions		97 x 64 x 52,5 mm	97 x 64 x 35 mm
Mounting on profiled DIN rail		35 x 7,5 mm	
Products comply with norms UTE C 61-740-51		Class II	

PRODUCT SPECIFICATION

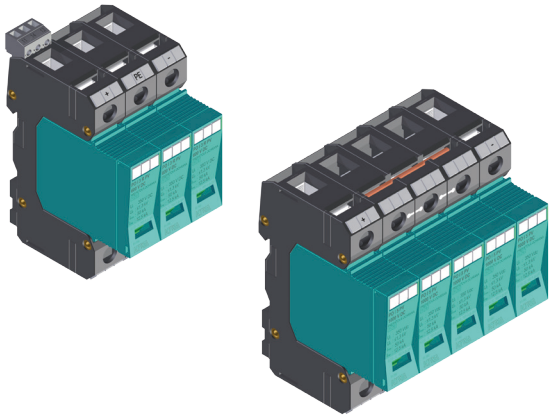
PO II | 3 | R | PV | 200V DC

- 200V DC — Max. operating voltage U_{CPV}
- PV — PV - possibility to use for photovoltaic systems
- R — R - remote signalling
- 3 — number of poles
- PO II — type SPD

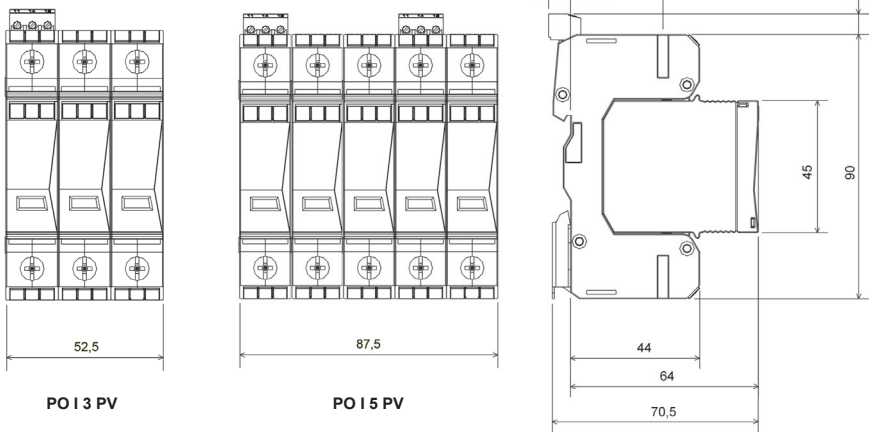
TYPE	Order number
PO II 2 PV 100V DC	82.150
PO II 2 R PV 100V DC	82.151
PO II 3 PV 200V DC	82.152
PO II 3 R PV 200V DC	82.153

PO I 3 PV
PO I 5 PV

- For protection of DC photovoltaic systems with operating voltage up to 1000 V DC
- 3-pole protection with enhanced withstand against failures of insulation against the earth
- Plug-in protectives modules
- Varistor modules for protection against overvoltage
- Optical signalization of operation state
- Remote signalization of operation state (R version)
- Protective modules rotable with respect to the base through 180°

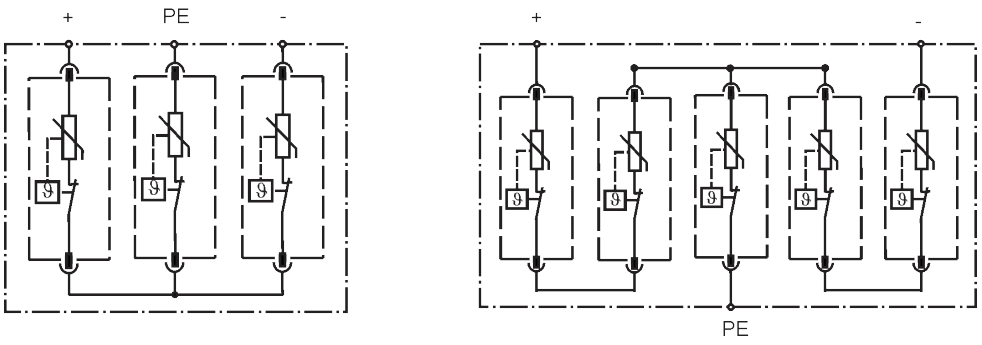


DIMENSIONS



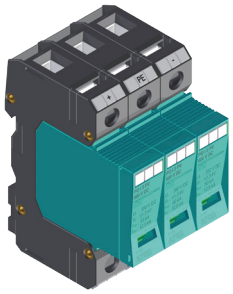
PO I 3 PV PO I 5 PV

CONNECTION DIAGRAM

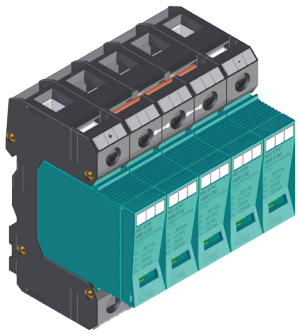


PO I 3 PV PO I 5 PV

BASIC VERSION



PO I 3 PV



PO I 5 PV

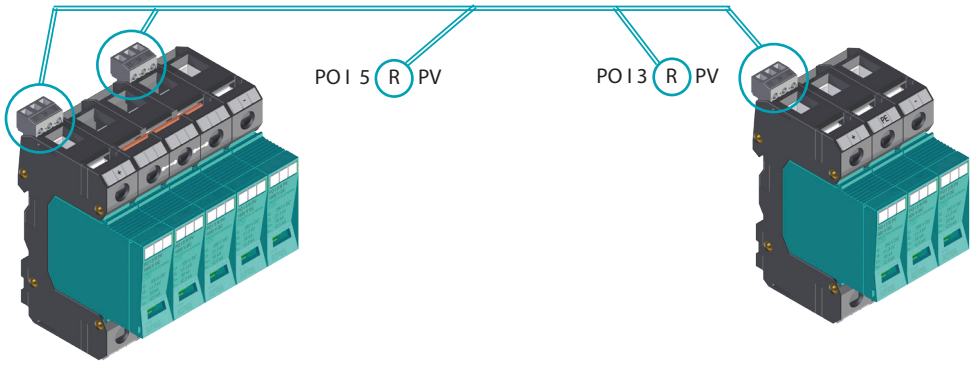
Signalling states:

green = OK

red = out of operation,
to be replaced immediately

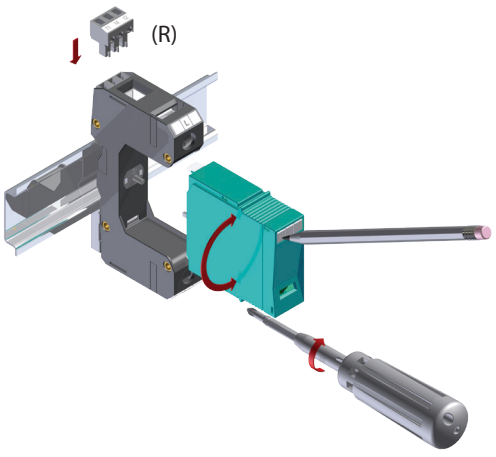
R and PE VERSION

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

KIWA	TYPE	PO I 3 PV	PO I 5 PV
Number of poles		3	5
Max. operating voltage T1, T2	U_{CPV}	600 V=	1000 V=
Voltage protection level at I_n T1,T2	U_p		
	L+/L-	≤ 2,8 kV	≤ 5,6 kV
	L+L-/PE	≤ 2,8 kV	≤ 4,2 kV
Response time	t_A		
	L+/L-	< 25 ns	< 25 ns
	L+L-/PE	< 25 ns	< 25 ns
Impulse current (10/350)	I_{imp}		
	L+/L-	12,5 kA	
	L+L-/PE	12,5 kA	12,5 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, □ 0,2 ... 1,5 mm^2, max. 250 V~/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 ... +70 °C	
Degree of protection		IP 20	
Dimensions		97 x 64 x 52,5 mm	97 x 64 x 87,5 mm
Mounting on profiled DIN rail		35 x 7,5 mm	
Products comply with norms EN 61643-11 IEC 61643-1 VDE 0675-06		type 1 T1 + type 2 T2 Class I + Class II Klasse B + Klasse C	

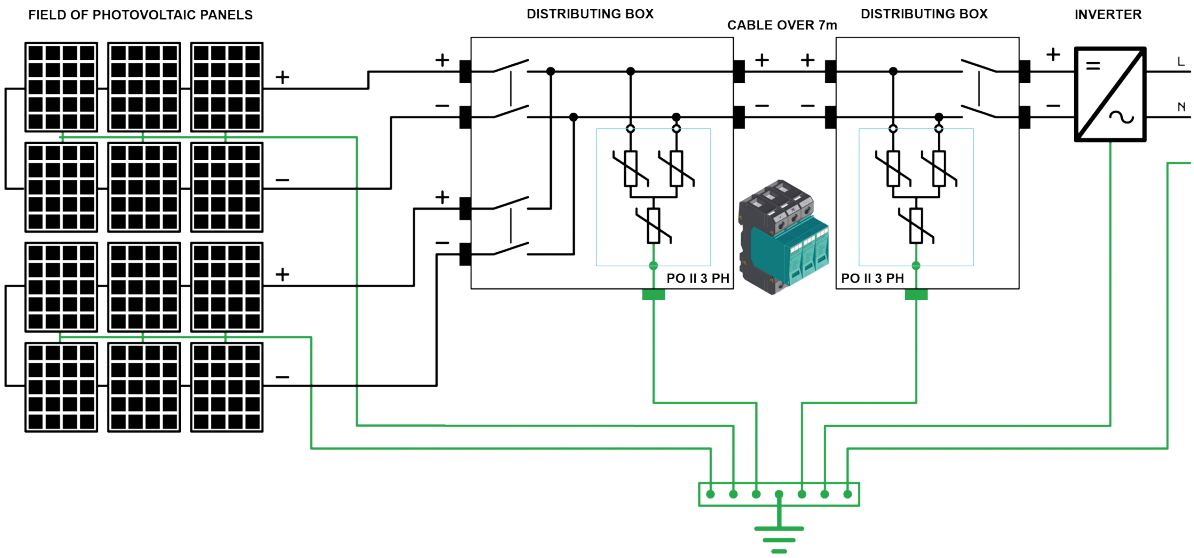
PRODUCT SPECIFICATION

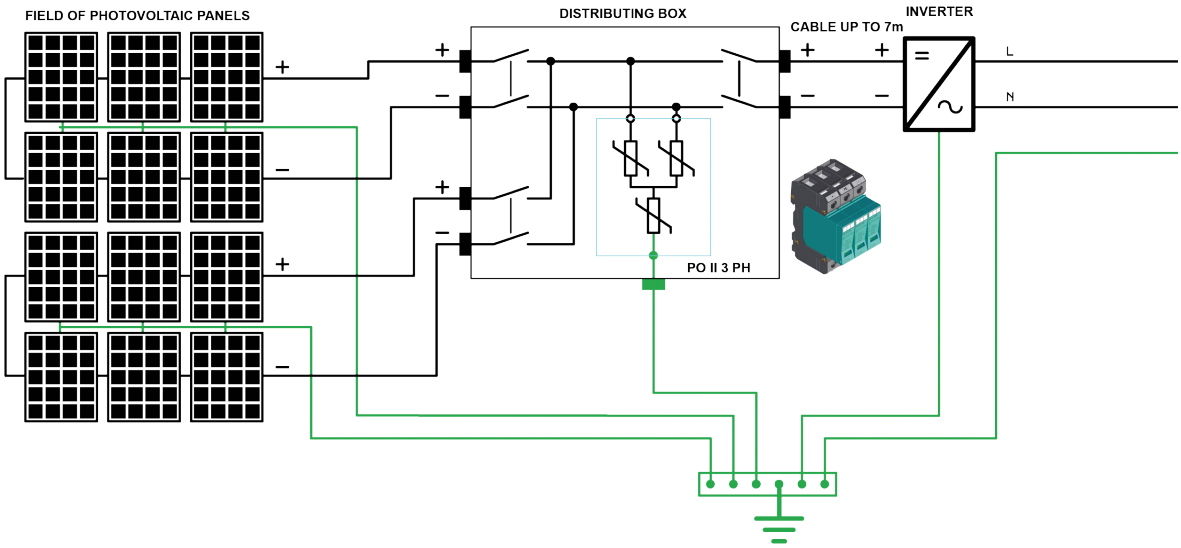
PO I 5 R PV 1000VDC/12,5kA

- PO I 5 – type SPD
- R - remote signalling
- PV - fotovoltaic
- U_{CPV} / I_{imp}

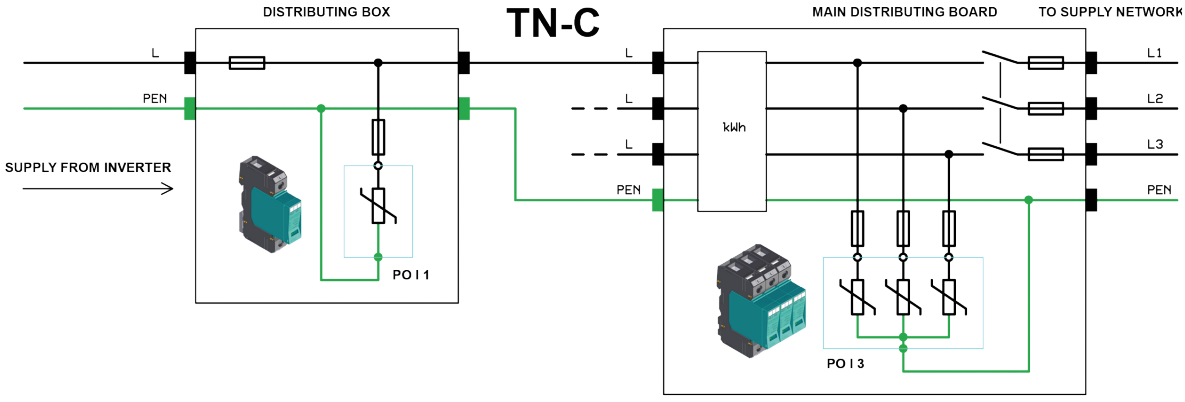
TYPE	Order number	TYPE	Order number
PO I 3 PV 600VDC/12,5kA	81.058	PO I 5 PV 1000VDC/12,5kA	81.062
PO I 3 R PV 600VDC/12,5kA	81.059	PO I 5 R PV 1000VDC/12,5kA	81.063
PO I 0 PV 600VDC/12,5kA	81.071	PO I 0 PV 1000VDC/12,5kA	81.072

EXAMPLES OF INSTALLATION FOR PHOTOVOLTAIC - DC SIDE

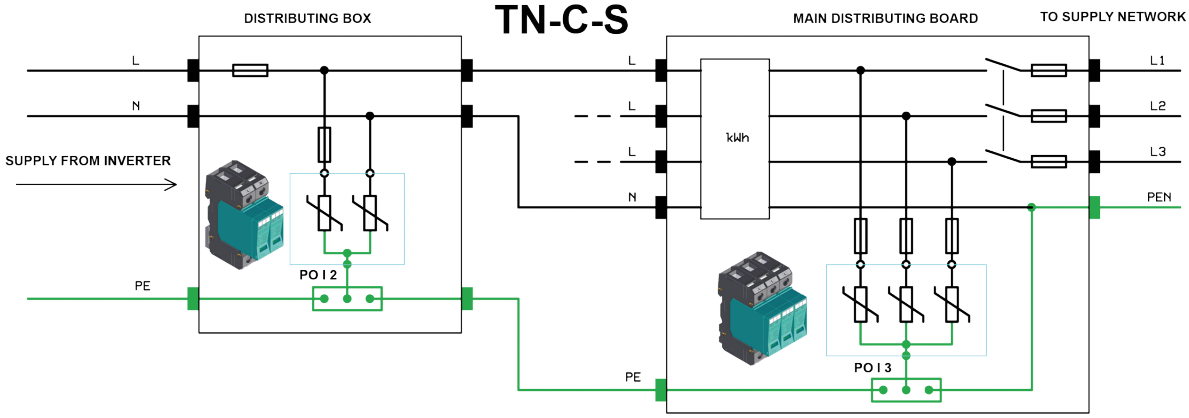




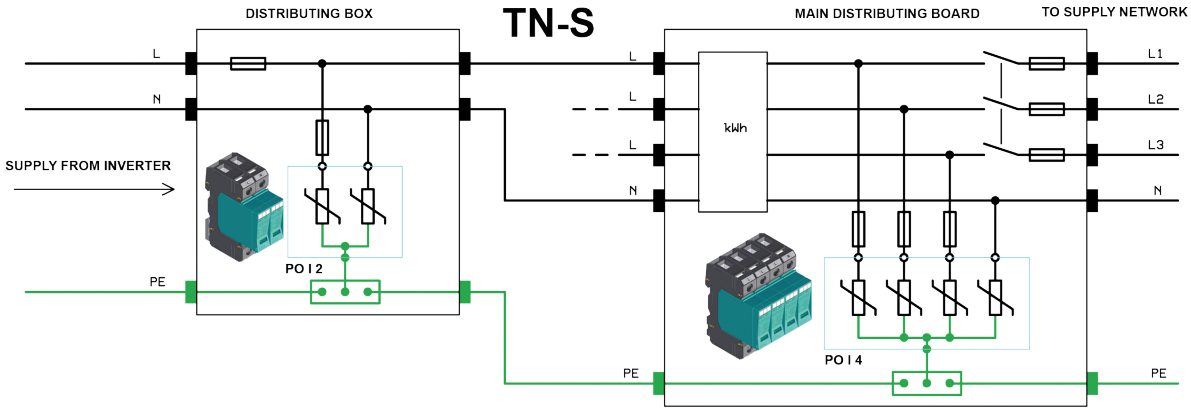
EXAMPLES OF INSTALLATION FOR PHOTOVOLTAIC - AC SIDE



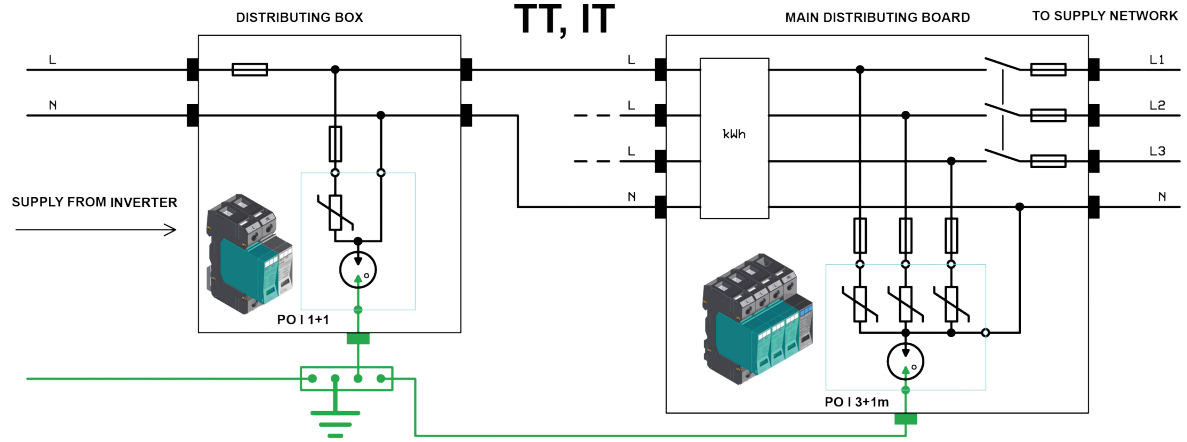
TN-C-S



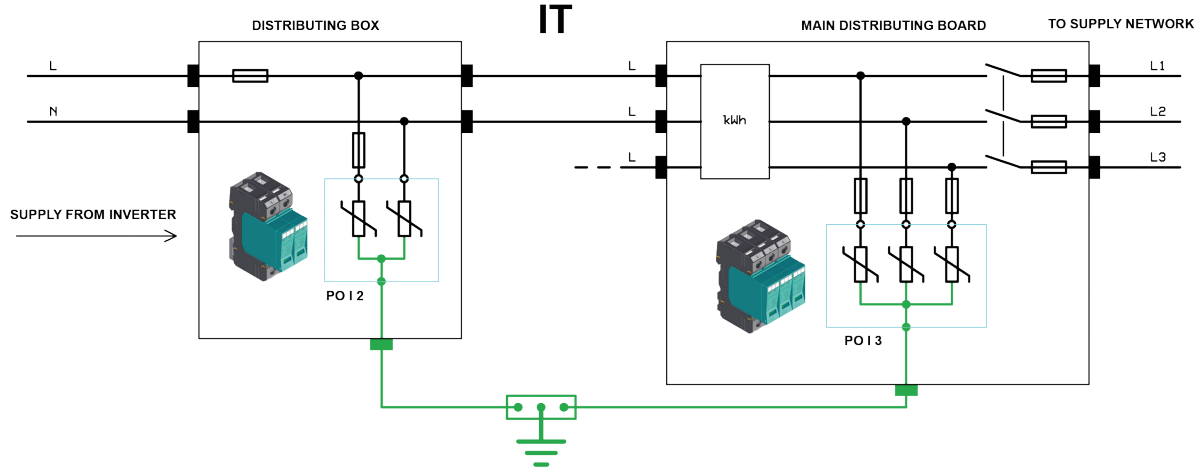
TN-S



TT, IT



IT

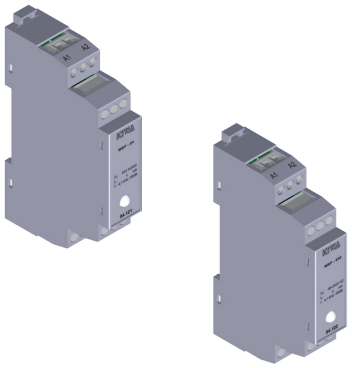


MSP-24
MSP-230

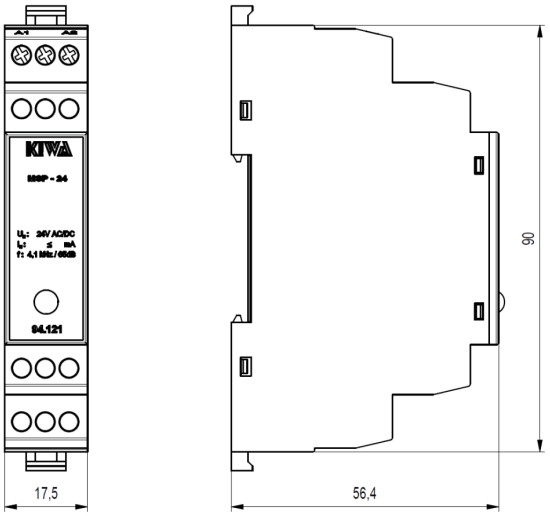
Fault signalization module MSP-24 and MSP 230

- It is designed for sound and light signalling of fault condition of surge protectors
- It is supplied in two versions:
- MSP-24 for 24 V AC/DC
- MSP-230 for 48 ÷ 230 V AC

Modules can be used as a signalling unit, also in other applications, such as machinery equipment etc.



DIMENSIONS



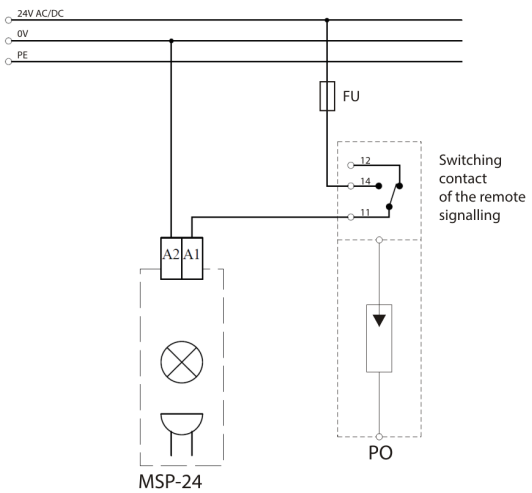
MSP-24
(MSP-230)

WIRING DIAGRAM

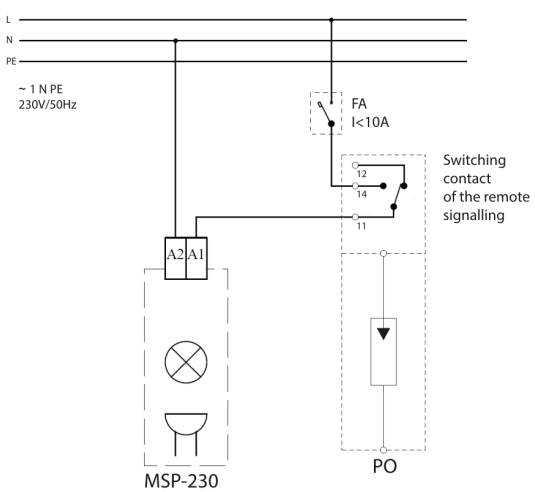
MSP-24
MSP-230

TECHNICAL PARAMETERS AND PRODUCT SPECIFICATION

TYPE		MSP-24	MSP-230
Power supply Voltage	U_N	24 V AC/DC	48 ÷ 230 V AC
Power supply current	I_N	20 mA	20 mA
Frequency	f	4,1 kHz /65 dB	4,1 kHz /65 dB
Order number		94.121	94.122



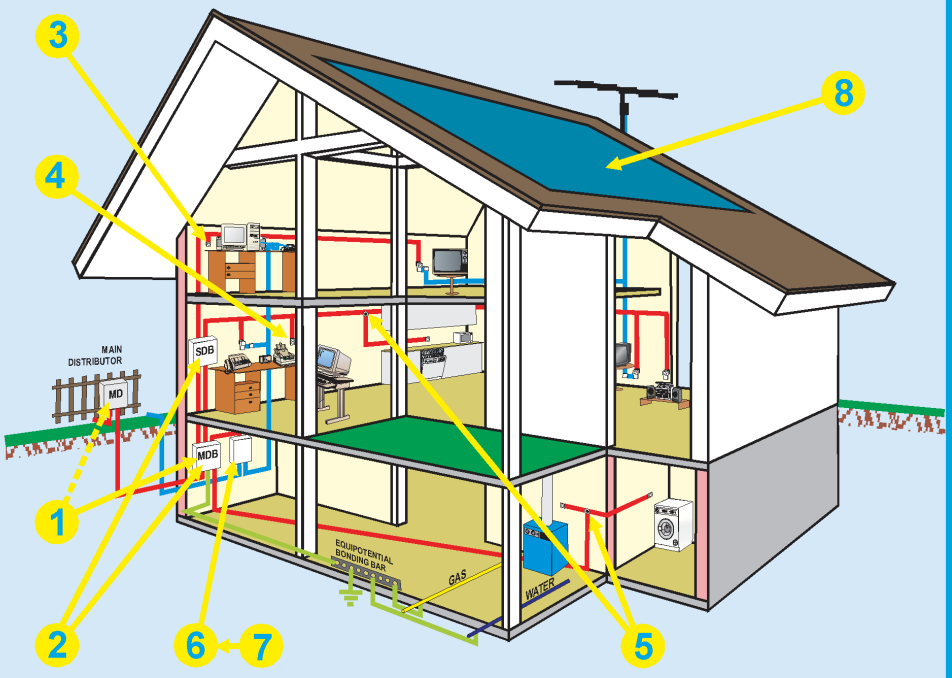
MSP-24



MSP-230

EXAMPLES OF „PO KIWA“ APPLICATIONS

SURGE PROTECTIVE DEVICES FOR FAMILY HOUSES



1 PO I
SURGE PROTECTIVE DEVICES

2 PO II
SURGE PROTECTIVE DEVICES

3 ZPO D1
OVERVOLTAGE PROTECTION SOCKET

4 ZPO D2
OVERVOLTAGE PROTECTION SOCKET

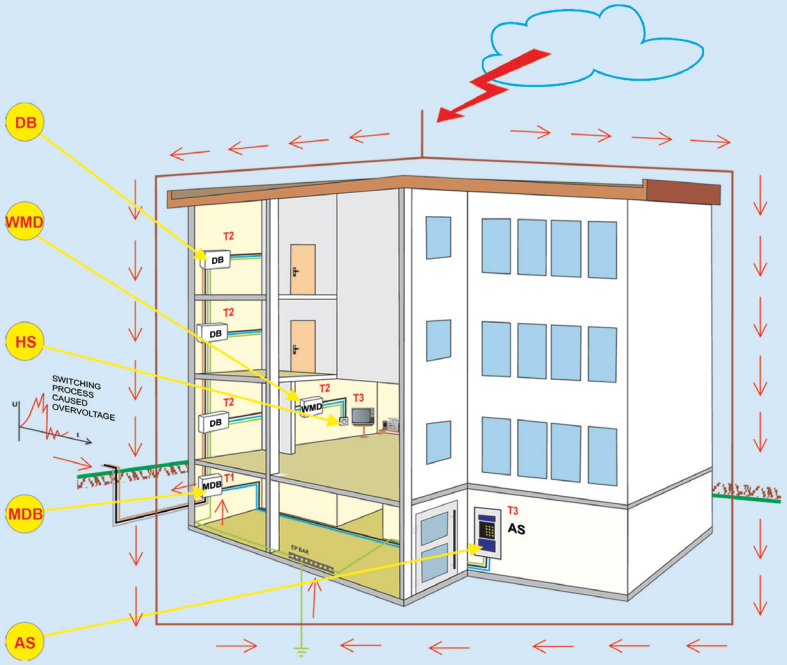
5 PODA-275
OVERVOLTAGE PROTECTION MODUL

6 DME100TX
OVERVOLTAGE PROTECTION FOR INSTRUMENTATION AND CONTROL

7 RPO DS
DISTRIBUTION BOX OVERVOLTAGE PROTECTION

8 PO II 3 PH
SURGE PROTECTIVE DEVICES FOR PROTECTION OF DC CIRCUIT PHOTOVOLTAIC SYSTEMS

SURGE PROTECTIVE DEVICES FOR APARTMENT HOUSES



MDB MAIN DISTRIBUTING BOARD
PO I (B+C+D)
SURGE PROTECTIVE DEVICES
TYPE 1

DB DISTRIBUTING BOARD
PO II (C+D)
SURGE PROTECTIVE DEVICES
TYPE 2

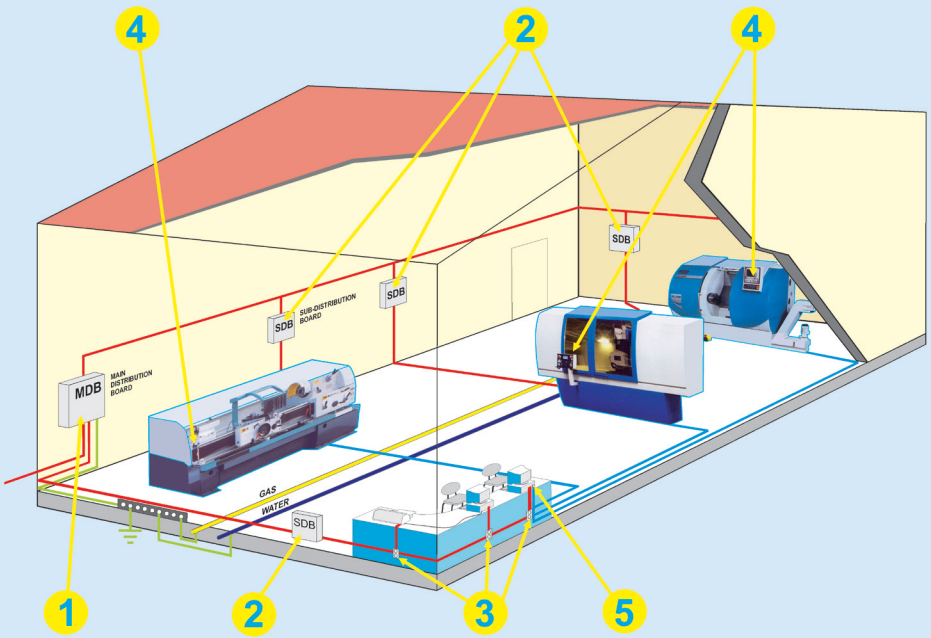
or

WMD WALL MOUNTED DISTRIBUTOR
PO II (C+D)
SURGE PROTECTIVE DEVICES
TYPE 2

HS HOUSE SOCKET 230V
PODA-275S
OVERVOLTAGE PROTECTION MODUL
TYPE 3

AS ATTENDANCE SYSTEM
RPO D
DISTRIBUTION BOX
OVERVOLTAGE PROTECTION
TYPE 3

SURGE PROTECTIVE DEVICES FOR INDUSTRIAL BUILDINGS



1 **PO I**
SURGE PROTECTIVE DEVICES

2 **PO II**
SURGE PROTECTIVE DEVICES

3 **ZPO D**
OVERVOLTAGE PROTECTION SOCKET

4 **RPO DS**
DISTRIBUTION BOX OVERVOLTAGE PROTECTION

5 **DM 232-8DB25**
OVERVOLTAGE PROTECTION FOR INSTRUMENTATION AND CONTROL

Quality of KIWA products is demonstrated by certificates from authorized EU testing laboratories

Order No. Index

SPD - Type 1

Order No.	Page 7-14
81.101	POm I N-PE 50 260V/50kA
81.104	POm I LCF 12,5 280V/12,5kA
81.107	POm I R LCF 12,5 280V/12,5kA
81.121	POm I N-PE 100 260V/100kA
81.124	POm I LCF 25 280V/25kA
81.125	POm I R LCF 25 280V/25kA
81.126	POm I LCF 30 280V/30kA
81.127	POm I R LCF 30 280V/30kA
81.128	POm I 4 LCF 100 280V/25kA
81.129	POm I 4 R LCF 100 280V/25kA
81.130	POm I 3 LCF 75 280V/25kA
81.131	POm I 3 R LCF 75 280V/25kA
81.132	POm I 3 LCF 90 280V/30kA
81.133	POm I 3 R LCF 90 280V/30kA
81.134	POm I 4 LCF 120 280V/30kA
81.135	POm I 4 R LCF 120 280V/30kA
81.136	POm I 3 LCF 37,5 280V/12,5kA
81.137	POm I 3 R LCF 37,5 280V/12,5kA
81.138	POm I 4 LCF 50 280V/12,5kA
81.139	POm I 4 R LCF 50 280V/12,5kA
81.140	POm I 3+1 LCF 50 280V/12,5kA
81.141	POm I 3+1 R LCF 50 280V/12,5kA
81.142	POm I 3+1 LCF 100/25 280V/25kA
81.143	POm I 3+1 R LCF 100/25 280V/25kA
81.144	POm I 1+1 LCF 50/30 280V/30kA
81.145	POm I 1+1 R LCF 50/30 280V/30kA
81.150	POm I 1+1 LCF 50/25 280V/25kA
81.151	POm I 1+1 R LCF 50/25 280V/25kA
81.152	POm I 3+1 LCF 100/30 280V/30kA
81.153	POm I 3+1 R LCF 100/30 280V/30kA
81.156	POmI LCF BD 38 280/38kA
81.157	POmI R LCF BD 38 280/38kA
81.160	POmI LCF BD 114 280/38kA
81.161	POmI R LCF BD 114 280/38kA
81.250	POm I 25 280V/25kA
81.255	POm I R 25 280V/25kA
81.253	POm I 3 75 280V/25kA
81.257	POm I 3 R 75 280V/25kA
81.254	POm I 4 100 280V/25kA
81.258	POm I 4 R 100 280V/25kA
81.259	POm I 3+1 100/25 280V/25kA
81.260	POm I 3+1 R 100/25 280V/25kA
81.261	POm I 1+1 50/25 280V/25kA
81.262	POm I 1+1 R 50/25 280V/25kA

Order No.	Page 15-20
81.001	PO I 1 280V/12,5kA
81.002	PO I 2 280V/12,5kA
81.003	PO I 3 280V/12,5kA
81.004	PO I 4 280V/12,5kA
81.005	PO I 1 R 280V/12,5kA
81.006	PO I 2 R 280V/12,5kA
81.007	PO I 3 R 280V/12,5kA
81.008	PO I 4 R 280V/12,5kA
81.009	PO I 1+1 280V/12,5kA
81.011	PO I 1+1 R 280V/12,5kA
81.013	PO I 3 EWS 280V/12,5kA
81.014	PO I 4 EWS 280V/12,5kA
81.015	PO I 3 R EWS 280V/12,5kA
81.016	PO I 4 R EWS 280V/12,5kA
81.017	PO I 0 280V/12,5kA
81.018	PO I 0 N-PE 260V/12,5kA
81.019	PO I 1 N-PE 260V/12,5kA
81.020	PO I 0 EWS 280V/12,5kA
81.023	PO I 1 EWS 280V/12,5kA
81.024	PO I 2 EWS 280V/12,5kA
81.025	PO I 1 R EWS 280V/12,5kA
81.026	PO I 2 R EWS 280V/12,5kA
81.027	PO I 3+1m 280V/12,5kA
81.028	PO I 3+1m R 280V/12,5kA
81.029	PO I 3+1m EWS 280V/12,5kA
81.030	PO I 3+1m R EWS 280V/12,5kA
81.031	PO I 1+1m 280V/12,5kA
81.032	PO I 1+1m R 280V/12,5kA
81.200	PO I 1 e 280V/7kA
81.201	PO I 3 e 280V/7kA
81.202	PO I 1 e R 280V/7kA
81.203	PO I 3 e R 280V/7kA
81.204	PO I 1+1 e 280V/7kA
81.205	PO I 1+1 e R 280V/7kA
81.206	PO I 3+1 e 280V/7kA
81.207	PO I 3+1 e R 280V/7kA
81.208	PO I 0 e 280V/7kA
81.209	PO I 0 e N-PE 260V/25kA
81.210	PO I 4 e 280V/7kA
81.211	PO I 4 e R 280V/7kA

SPD - Type 2

Order No.	Page 21-26
82.001	PO II 1 280V/40kA
82.002	PO II 2 280V/40kA
82.003	PO II 3 280V/40kA
82.004	PO II 4 280V/40kA
82.005	PO II 1 R 280V/40kA
82.006	PO II 2 R 280V/40kA
82.007	PO II 3 R 280V/40kA
82.008	PO II 4 R 280V/40kA
82.009	PO II 3 LCF 280V/40kA
82.010	PO II 4 LCF 280V/40kA
82.011	PO II 3 R LCF 280V/40kA
82.012	PO II 4 R LCF 280V/40kA
82.013	PO II 3 EWS 280V/40kA
82.014	PO II 4 EWS 280V/40kA
82.015	PO II 3 R EWS 280V/40kA
82.016	PO II 4 R EWS 280V/40kA
82.017	PO II 1+1 280V/40kA
82.018	PO II 3+1 280V/40kA
82.019	PO II 1+1 R 280V/40kA
82.020	PO II 3+1 R 280V/40kA
82.021	PO II 1 75V/40kA
82.022	PO II 2 75V/40kA
82.023	PO II 1 R 75V/40kA
82.024	PO II 2 R 75V/40kA
82.025	PO II 1 130V/40kA
82.026	PO II 2 130V/40kA
82.027	PO II 3 130V/40kA
82.028	PO II 4 130V/40kA
82.029	PO II 1 R 130V/40kA
82.030	PO II 2 R 130V/40kA
82.031	PO II 3 R 130V/40kA
82.032	PO II 4 R 130V/40kA
82.033	PO II 1 385V/40kA
82.034	PO II 2 385V/40kA
82.035	PO II 3 385V/40kA
82.036	PO II 4 385V/40kA
82.037	PO II 1 R 385V/40kA
82.038	PO II 2 R 385V/40kA
82.039	PO II 3 R 385V/40kA
82.040	PO II 4 R 385V/40kA
82.041	PO II 3+1 385V/40kA
82.042	PO II 3+1 R 385V/40kA
82.043	PO II 1 550V/40kA
82.044	PO II 2 550V/40kA
82.045	PO II 3 550V/40kA
82.046	PO II 4 550V/40kA
82.047	PO II 1 R 550V/40kA
82.048	PO II 2 R 550V/40kA
82.049	PO II 3 R 550V/40kA
82.050	PO II 4 R 550V/40kA
82.051	PO II 2+1 550V/40kA
82.052	PO II 2+1 R 550V/40kA
82.053	PO II 0 280V/40kA
82.054	PO II 0 LCF 280V/40kA
82.055	PO II 0 EWS 280V/40kA
82.056	PO II 0 75V/40kA
82.057	PO II 0 130V/40kA
82.058	PO II 0 385V/40kA
82.059	PO II 0 550V/40kA
82.060	PO II 0 N-PE 260V/40kA
82.061	PO II 1 N-PE 260V/40kA
82.062	PO II 2+1 280V/40kA
82.063	PO II 2+1 R 280V/40kA
82.064	PO II 1 LCF 280V/40kA
82.065	PO II 2 LCF 280V/40kA
82.066	PO II 1 R LCF 280V/40kA
82.067	PO II 2 R LCF 280V/40kA
82.068	PO II 1 EWS 280V/40kA
82.069	PO II 2 EWS 280V/40kA
82.070	PO II 1 R EWS 280V/40kA
82.071	PO II 2 R EWS 280V/40kA
82.301	PO II G 1
82.305	PO II G 1 R
82.309	PO II G 1+1
82.310	PO II G 1+1 R
82.302	PO II G 2
82.306	PO II G 2 R
82.311	PO II G 2+1
82.312	PO II G 2+1 R
82.303	PO II G 3
82.307	PO II G 3 R
82.313	PO II G 3+1
82.314	PO II G 3+1 R
82.304	PO II G 4
82.308	PO II G 4 R

Order No.	
82.317	PO II G 0
82.315	PO II 0 N-PE
82.316	PO II 1 N-PE

Busbars

Order No.	Page 9
91.601	2 pole - QB 18 - 2
91.603	3 pole - QB 18 - 3
91.605	4 pole - QB 18 - 4
91.610	6 pole - QB 18 - 6
91.609	8 pole - QB 18 - 8

SPD - Type 3

Order No.	Page 27-35
92.005	ZPO D1B - TA, without box
92.008	ZPO D2B - TA
92.011	ZPO D1M/74111-MOSAIC
92.012	ZPO D1M/74114-MOSAIC
92.021	POD S
92.024	RPO D 230V
92.025	RPO DS 230V
92.035	ZPO D11 - CL
92.042	RPOD F 16
92.043	RPOD R F 16
92.069	ZPOI D1B - TA
92.070	ZPOI D2B - TA
92.071	ZPOI D11 - CL
92.072	ZPOI D21 - CL
92.081	RPO D 115V
92.082	RPO D 24V
92.083	RPO D 48V
92.160	RPO D 12V
92.084	RPO DS 115V
92.085	RPO DS 24V
92.086	RPO DS 48V
92.161	RPO DS 12 V
92.094	ZPO D2R - TA
92.098	ZPOI D1R - TA
92.110	ZPOI D1 - TA
92.116	ZPOI D2R - TA
92.133	PODA-275
92.134	PODA-275S
92.135	POD-275S
92.136	RPOD F 6
92.137	RPOD R F 6
92.142	RPOD F 16-L
92.143	RPOD R F 16-L
92.144	RPOD F 6-L
92.145	RPOD R F 6-L
92.200	PO LED-Wzk/zS
92.201	PO LED-K/zS
92.202	PO LED-W/zS
92.203	PO II LED 230V/30kA
92.005	ZPO D1B - TA, without box
92.008	ZPO D2B - TA
92.035	ZPO D11 - CL
92.069	ZPOI D1B - TA
92.070	ZPOI D2B - TA
92.071	ZPOI D11 - CL
92.072	ZPOI D21 - CL
92.094	ZPO D2R - TA
92.098	ZPOI D1R - TA
92.110	ZPOI D1 - TA
92.116	ZPOI D2R - TA
92.011	ZPO D1M/74111-MOSAIC
92.012	ZPO D1M/74114-MOSAIC
92.162/20	ZPO D LMO1 iS-3kV White
92.162/10	ZPO D LMO1 iS-3kV Red
92.166/10	ZPO D ATA1 iS-3kV White
92.164/10	ZPO D ATA2 iS-3kV White
92.165/10	ZPO D LMI1 zS-4kV White

SPD for photovoltaic systems Type 2

Order No.	Page 44-45
82.072	PO II 3 PH 1000VDC/40kA
82.073	PO II 3 R PH 1000VDC/40kA
82.113	PO II 3 PH 600VDC/40kA
82.114	PO II 3 R PH 600VDC/40kA
82.141	PO II 0 PH 1000VDC/40kA
82.142	PO II 0 PH 600VDC/40kA

Order No.	Page 46-51
82.107	POPV II 3 F 1000VDC
82.108	POPV II 3 F R 1000VDC
82.109	POPV II 0 F 1000VDC
82.125	POPV II 2 F 600VDC
82.126	POPV II 2 F R 600VDC
82.127	POPV II 0 F 600VDC
82.143	PO II 1 PV 100VDC
82.144	PO II 1 R PV 100VDC
82.145	PO II 0 PV 100VDC
82.150	PO II 2 PV 100VDC
82.151	PO II 2 R PV 100VDC
82.152	PO II 3 PV 200VDC
82.153	PO II 3 R PV 200VDC

SPD for photovoltaic systems Type 1

Order No.	Page 52-54
81.058	PO I 3 PV 600VDC/12,5kA
81.059	PO I 3 R PV 600VDC/12,5kA
81.062	PO I 5 PV 1000VDC/12,5kA
81.063	PO I 5 R PV 1000VDC/12,5kA
81.071	PO I 0 PV 600VDC/12,5kA
81.072	PO I 0 PV 1000VDC/12,5kA

Fault signalization module

Order No.	Page 57
94.121	MSP-24
94.122	MSP-230

SPD for instrumentation and control

Order No.	Page 36-42
94.001	DM-CS-M/8V
94.002	DM-CS-R/8V
94.007	DME100TX-4RJ
94.008	DME100TX-4K
94.042	DME100TX-4RJ-R
94.010	DN-BA1-R/16V
94.013	DN-BS-R/16V
94.016	DM-CS-M/12V
94.017	DM-CS-R/12V
94.018	DM-CS-M/24V
94.019	DM-CS-R/24V
94.020	DM485-4DB25.A
94.021	DM485-4DB25.B
94.022	DM-CC-R/8V
94.023	DN-BS-R/24V
94.030	DM-BSO-P/24V
94.031	DM-BST-R/24V
94.032	DM-BA-R/48V
94.033	DM-BA-R/24V
94.034	DM-CS-R/48V
94.035	DM-CC-R/16V
94.036	DN-BAT-R/24V
94.038	DM-BS-R/24V
94.039	DN-BA-R/24V
94.040	DM-CS-M/48V
94.043	DM-BA-R/12V
94.044	DN-BA-R/12V
94.045	DM-BA-R/16V
94.046	DM-BA1- R/24V
94.047	DM-BAT-R/24V
94.048	DN-BA1-R/24V
94.050	DN-BST-R/24V
94.057	DM-CC-R/24V
94.058	DM-CCT-R/8V
94.059	DM-CCT-R/12V
94.060	DM-CCT-R/16V
94.061	DM-CCT-R/24V
94.062	DM-CCT-R/48V
94.063	DM-BA1-R/8V
94.064	DN-BA1-R/12V
94.065	DM-BA1-R/12V
94.066	DM-BA-R/48V

NOTES

NOTES

NOTES

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