

Acti9 Protection and Isolation

General overview

iPRD1 12.5r Type 1 + 2 Low Voltage surge arresters

The Type 1 range of surge arresters meets the normative withstand capability of current wave type 10/350 μ s (8/20 μ s for Type 2 surge arresters).

It is suitable for use with TT, TN-S, TN-C and IT earthing connection systems (neutral point connection).

iPRD1 12.5r surge arresters are fitted with a remote transfer contact to send "end-of-life indication" information.

They are also fitted with easy-to-replace withdrawable cartridges.



iPRD1 12.5r

The Type 1 surge arrester is recommended for electrical installations in the service sector and industrial buildings protected by a lightning conductor or by a meshed cage.

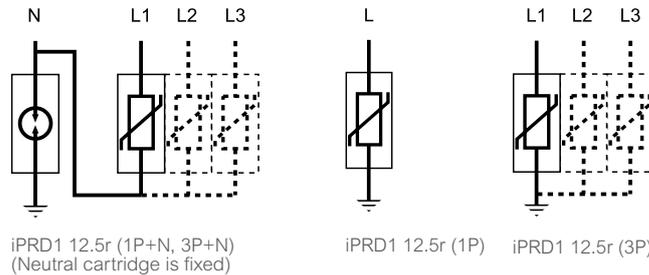
It protects electrical installations against direct lightning strikes.

It is used to conduct the direct lightning current, propagating from the earth conductor to the network conductors.

It must be installed with an upstream disconnection device, such as a fuse or circuit-breaker, whose breaking capacity must be at least equal to the maximum prospective short-circuit current at the installation point.

iPRD1 12.5r surge arresters also provide Type 2 protection and protect the electrical installation by inely clipping the lightning wave overvoltages.

Cover all applications required by the MEN earthing system (Multiple Earthed Neutral) defined by AS/NZS 3000. 1P or 3P SPDs need to be installed in the main LV switchboard where the MEN link is connected. 1PN or 3PN are installed in the other distribution boards.



Type	Product Solution				Earthing system
	1P+N	3P+N	1P	3P	
iPRD1 12.5r	A9L16282	A9L16482			TT, TN-S
T1 + T2			A9L16182	A9L16382	TN-C

Type	No. of poles	Width 9 mm modules	I imp (kA) (10/350) Impulse current	I max (kA) (8/20) Maximum discharge current	In - kA Nominal discharge current	Up - kV Voltage protection level	Un - (V) Rated voltage network	Uc - V Maximum continuous operating voltage (L-N)/(N-PE)	Cat. no.
Withdrawable surge arrester									
iPRD1 12.5r	1P	2	12.5 (L-N)/50 (N-PE)	50	20	≤ 1.5	230	350/255	A9L16182
	1P+N	4	12.5 (L-N)/50 (N-PE)	50	20	≤ 1.5	230	350/255	A9L16282
Type 1 + 2	3P	6	12.5	50	20	≤ 1.5	230/400	350	A9L16382
	3P+N	8	12.5 (L-N)/50 (N-PE)	50	20	≤ 1.5	230/400	350/255	A9L16482

Spare cartridge

iPRD1 12.5r	-	2	-	-	20	≤ 1.5	-	350	A9L16082
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Surge arresters	Spare cartridge	
	Phase	Neutral
iPRD1 12.5r	A9L16082	-

Technical Data

iPRD1 12.5r Type 1 + 2 Low Voltage surge arresters (cont.)



Technical Data

Main characteristics			
Operating frequency		50 Hz	
Degree of protection	Front panel	IP40	
	Terminals	IP20	
	Impacts	IK05	
Response time		< 25 ns	
Short circuit withstand (I _{sc})		50 kA	
Temporary overvoltage withstand (U _T)	U _T (L-N)	337 V AC/5 s	
	U _T (L-PE)	442 V AC/120 min	
Temporary overvoltage Safe failure mode (U _T)	U _T (N-PE)	1200 V AC/200 ms	
	U _T (L-PE)	1455 V AC/200 ms	
Ground residual current (I _{PE})	I _{PE} (L-PE)	0.009 mA for 1P, 3P	
	I _{PE} (N-PE)	0.000003 mA for 1P+N, 3P+N	
Follow current interrupting rating (I _{fi})	I _{fi} (N-PE)	100 A	
End-of-life indication		White: correct operation	
		Red: at end of life	
By tunnel terminal	Live conductor	Rigid cable	10...35 mm ²
		Flexible cable	10...25 mm ²
	Earth cable	Rigid cable	16...35 mm ²
		Flexible cable	16...25 mm ²
Operating temperature		-25°C to +60°C	
Humidity range		5 % to 95 %	
Standards		IEC 61643-11: 2011 T1, T2 EN 61643-11: 2012 Type 1 + Type 2	
Approvals		CE, EAC, VDE	

Choice of disconnector / surge arrester

Type	I _{imp} : impulse current	I _{sc} : prospective short circuit current at installation point					
		10 kA	15 kA	16 kA	25 kA	35 kA	50 kA
iPRD1 12.5r	12.5 kA	C120N C80 A ⁽¹⁾	C120H C80 A ⁽¹⁾	NG125N C80 A ⁽²⁾	Compact NSXm F TM80D	Compact NSXm N TM80D	Compact NSXm H TM80D

(1): For lightning impulse current withstand use NSXm E TM80D range
 (2): For lightning impulse current withstand use NSXm B TM80D range

iPRD1 12.5r

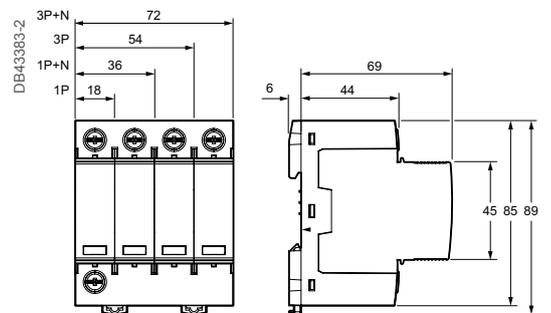
- The surge arrester base can be turned over to allow the phase/neutral/earth cables to enter through either the top or the bottom



Weight (g)

Surge arresters		
Type	iPRD1 12.5r	
1P		171
1P+N		299
3P		486
3P+N		619
Cartridge	Neutral	112
	Phase	

Dimensions (mm)



Acti9 Protection and Isolation

Reference Numbers

iPRD surge arresters

Type 2 or 3 LV withdrawable surge arresters

iPRD withdrawable surge arresters allow quick replacement of damaged cartridges. Type 2 surge arresters are tested with a 8/20 μ s current wave. Type 3 surge arresters are tested with a 1.2/50 μ s and 8/20 μ s combined wave.

Each surge arrester in the range has a specific application:

- incoming protection (type 2):**
 - the iPRD65r is recommended for a very high risk level (strongly exposed site)
 - the iPRD40(r) is recommended for a high risk level
 - the iPRD20(r) is recommended for a medium risk level
- secondary protection (type 2 or 3):**
 - the iPRD8(r) ensures secondary protection of loads to be protected and is placed in cascade with the incoming surge arresters. This surge arrester is required when the loads to be protected are at a distance of more than 10 m from the incoming surge arrester.

The iPRD surge arresters with "r" indication have remote transfer of the information: "cartridge to be replaced".

Cover all applications required by the MEN earthing system (Multiple Earthed Neutral) defined by AS/NZS 3000. 1P or 3P SPDs need to be installed in the main LV switchboard where the MEN link is connected. 1PN or 3PN are installed in the other distribution boards.

PB110274-35



2P

PB110280-35



4P

Rated discharge current (Imax)	Nominal discharge current (In)	Type of protection		Network						
		Incoming	Secondary	1P+N	3P+N	1P	2P	3P	4P	
iPRD65										
65 kA Very high risk level (strongly exposed site)	20 kA	iPRD65				A9L65101				
				A9L65501		A9L65121				
								A9L65301		
						A9L65601				
iPRD40										
40 kA High risk level	15 kA	iPRD40				A9L40101				
						A9L40100				
				A9L40501						
				A9L40500						
								A9L40301		
								A9L40300		
						A9L40601				
						A9L40600				
iPRD20										
20 kA Medium risk level	5 kA	iPRD20				A9L20100				
				A9L20501						
				A9L20500						
								A9L20300		
						A9L20601				
						A9L20600				
iPRD8										
8 kA Secondary protection: placed near the loads to be protected when they are at a distance of more than 10 m from the incoming surge arrester	2.5 kA		iPRD8			A9L08100				
				A9L08501						
				A9L08500						
								A9L08300		
						A9L08601				
						A9L08600				

Reference Numbers

iPRD surge arresters

Type 2 or 3 LV withdrawable surge arresters (cont.)



Spare cartridges iPRD		
Type	Spare cartridges for	Cat. no
iPRD 65-350	iPRD65r	A9L65102
iPRD 40-350	iPRD40, iPRD40r	A9L40102
iPRD 20-350	iPRD20, iPRD20r	A9L20102
iPRD 8-350	iPRD8, iPRD8r	A9L08102
iPRD Neutral	All products (1P+N, 3P+N)	A9L00002

	Earthing system	Transfer	Surge arrester name	Width in mod. of 9 mm	Up - (kV) Voltage protection level			Un - (V) Rated voltage network	Uc - (V) Maximum continuous operating voltage		
					CM*	DM*			CM*	DM*	
					L/t	N/t	L/N		L/t	N/t	L/N
iPRD65											
A9L65101	TT & TN	■	iPRD65r 1P	2	y 1.5	-	-	230	350	-	-
A9L65501	TT & TN-S	■	iPRD65r 1P+N	4	-	y 1.4	y 1.5	-	-	260	350
A9L65301	TN-C	■	iPRD65r 3P	6	y 1.5	-	-	230/400	350	-	-
A9L65601	TT & TN-S	■	iPRD65r 3P+N	8	-	y 1.4	y 1.5	-	-	260	350
iPRD40											
A9L40101	TT & TN	■	iPRD40r 1P	2	y 1.6	-	-	230	350	-	-
A9L40100	TT & TN		iPRD40 1P		y 1.6	-	-		350	-	-
A9L40501	TT & TN-S	■	iPRD40r 1P+N	4	-	y 1.4	y 1.6	-	-	260	350
A9L40500	TT & TN-S		iPRD40 1P+N		-	y 1.4	y 1.6		-	260	350
A9L40301	TN-C	■	iPRD40r 3P	6	y 1.6	-	-	230/400	350	-	-
A9L40300	TN-C		iPRD40 3P		y 1.6	-	-		350	-	-
A9L40601	TT & TN-S	■	iPRD40r 3P+N	8	-	y 1.4	y 1.6	-	-	260	350
A9L40600	TT & TN-S		iPRD40 3P+N		-	y 1.4	y 1.6		-	260	350
iPRD20											
A9L20100	TT & TN		iPRD20 1P	2	y 1.2	-	-	230	350	-	-
A9L20501	TT & TN-S	■	iPRD20r 1P+N	4	-	y 1.4	y 1.2	-	-	260	350
A9L20500	TT & TN-S		iPRD20 1P+N		-	y 1.4	y 1.2		-	260	350
A9L20300	TN-C		iPRD20 3P	6	y 1.2	-	-	230/400	350	-	-
A9L20601	TT & TN-S	■	iPRD20r 3P+N	8	-	y 1.4	y 1.2	-	-	260	350
A9L20600	TT & TN-S		iPRD20 3P+N		-	y 1.4	y 1.2		-	260	350
iPRD8 (1)					Type 2 / Type 3 (1)						
A9L08100	TT & TN		iPRD8 1P	2	y 1.2	-	-	230	350	-	-
A9L08501	TT & TN-S	■	iPRD8r 1P+N	4	-	y 1.4	y 1.2	-	-	260	350
A9L08500	TT & TN-S		iPRD8 1P+N		-	y 1.4	y 1.2		-	260	350
A9L08300	TN-C		iPRD8 3P	6	y 1.2	-	-	230/400	350	-	-
A9L08601	TT & TN-S	■	iPRD8r 3P+N	8	-	y 1.4	y 1.2	-	-	260	350
A9L08600	TT & TN-S		iPRD8 3P+N		-	y 1.4	y 1.2		-	260	350

* CM: common mode (phase to earth and neutral to earth).
 * DM: differential mode (phase to neutral).
 (1) Uoc: combined waveform voltage: 10 kV.



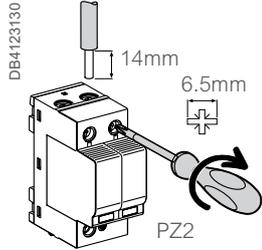
Acti9 Protection and Isolation

General overview

iPRD surge arresters

Type 2 or 3 LV withdrawable surge arresters

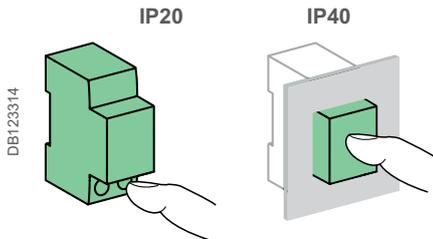
Connection



Type	Tightening torque	Copper cables	
		Rigid	Flexible or with ferrule
iPRD	3.5 N.m	2.5 to 25 mm ² DB122945	4 to 16mm ² DB122946

Technical Data iPRD surge arresters

Main characteristics		iPRD
Operating frequency		50/60 Hz
Operating voltage (Ue)		230/400 V AC ±10 %
Permanent operating current (Ic)		< 1 mA
Response time		< 25 ns
Short circuit current rating (Iscrr)		50 kA (50 Hz)
Short circuit current rating (Iscrr), case of double fault		-
Temporary overvoltage withstand (U _T)	U _T (L-N)	337 V AC / 5 s
	U _T (L-PE)	442 V AC / 120 min
Temporary overvoltage	U _T (N-PE)	1200 V AC / 200 ms
Safe failure mode (U _f)	U _f (L-PE)	1455 V AC / 200 ms
Ground residual current (I _{PE})	I _{PE} (L-PE)	600 µA for 1P, 2P, 3P, 4P
	I _{PE} (N-PE)	3 µA for 1P+N, 3P+N
Satisfactory operation indication: by mechanical indicator	White	In operation
	Red	Cartridge must be replaced
Remote indication of satisfactory operation		By contact NO, NC 250 V / 0.25 A
Additional characteristics		
Degree of protection (IEC 60529)	Device only	IP20 (built-in)
	Device in modular enclosure	IP40
Operating temperature		-25°C to +60°C
Storage temperature		-40°C to +85°C
Humidity range		5 % to 95 %
Type of connection terminals		Tunnel terminals, 2.5 to 35 mm ²
Standards		IEC 61643-11: 2011 T2, T3 and EN 61643-11: 2012 Type 2, Type 3



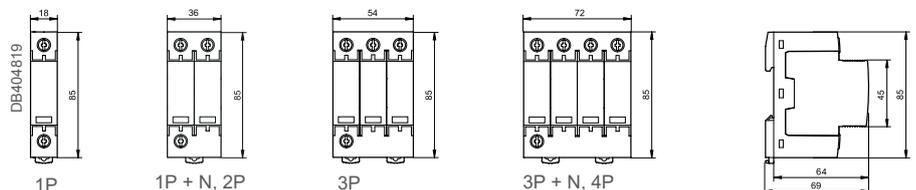
Surge arrester/circuit breaker association

Surge arrester	Associated circuit breaker	
	iPRD	
	Isc y 25 kA	Isc y 50 kA
iPRD65	Curve C 50 A	Curve C 63 A
iPRD40	Curve C 40 A	Curve C 63 A
iPRD20	Curve C 20 A	Curve C 63 A
iPRD8	Curve C 10 A	Curve C 63 A

Weight (g)

Surge arrester	
Type	iPRD
1P	119
1P+N	220
3P	340
3P+N	450

iPRD dimensions (mm)



General overview

iPRD surge arresters

Type 2 or 3 LV withdrawable surge arresters (cont.)

iPRD surge arresters

PB110281-60

Satisfactory operation indication

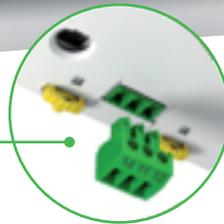
- By mechanical indicator
 - white: operating
 - red: cartridge must be replaced



Terminals

- IP20

- Transfer to Acti9 Smartlink



Connection iPRD surge arresters with its short circuit disconnector

TT/TN-S

Power supply through the top
Connection with cables

PB110289-50



Surge arrester iPRD 3P+N + iC60N 3P+N

Reversible

- The surge arrester base can be turned over to allow the phase/neutral/earth cables to enter through either the top or the bottom

TT/TN-S

Power supply through the bottom
Connection with comb busbar

PB110793-50



Surge arrester iPRD 3P+N + iC60N 3P+N

IT/TNC-S with neutral

Power supply through the top
Connection with comb busbar

PB1107290-50



Surge arrester iPRD 4P + iC60N 4P

IT/TNC-S with neutral

Power supply through the bottom
Connection with comb busbar

PB110794-50



Surge arrester iPRD 4P + iC60N 4P

- A
- B
- C
- D
- E
- F
- G
- H
- I