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Protection

Load protection

iPRF1 12.5r/PRF1 Master/
PRD1 25r/PRD1 Master

Type 1 and 2 LV 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 230 V IT earthing connection systems (neutral point connection). In addition, the PRF1 Master surge arrester covers the 400 V IT system.

iPRF1 12.5r and PRD1 surge arresters are fitted with a remote transfer contact to send "end-of-life indication" information.

PRD1 surge arresters are fitted with easy-to-replace withdrawable cartridges.

iPRF1 12.5r/PRF1 Master/PRD1 25r/PRD1 Master

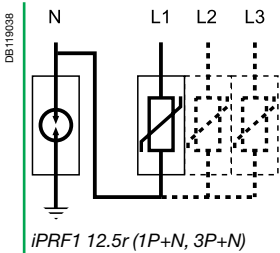
The Type 1 surge arrester is recommended for electrical installations in the service sector and industrial buildings protected by a lightning conductor or by a meshed cage.

It protects electrical installations against direct lightning strikes.

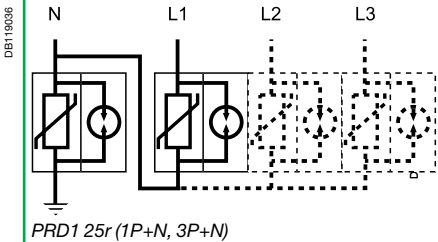
It is used to conduct the direct lightning current, propagating from the earth conductor to the network conductors.

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.

iPRF1 12.5r and PRD1 25r surge arresters also provide Type 2 protection and protect the electrical installation by finely clipping the lightning wave overvoltages.



Type	Product solution	
Fixed surge arrester	1P+N	3P+N
iPRF1 12.5r T1, T2	A9L16632	A9L16634



Cartridge surge arrester	1P+N	3P+N
PRD1 25r T1 + T2	16330	16332
PRD1 Master T1	16361	16363

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PB104275-35



iPRF1 12.5r

PB104260-35



PRD1 25r

PB104264-35



PRD1 Master

	Neutral point connection
	TT, TN-S
	TT, TN-S
	TT, TN-S

(1) Version without indicator light.

Protection Load protection

iPRF1 12.5r/PRF1 Master/ PRD1 25r/PRD1 Master Type 1 and 2 LV surge arresters (cont.)

Type	Nb. of poles	Width	I imp (kA) (10/350) Impulse current		I max (kA) (8/20) Maximal discharge current	In - kA Rated discharge current	Up - kV Degree of protection	Un - V Nominal line voltage	Uc - V Maximum steady state voltage	
Fixed surge arrester		9 mm modules	Surge arrester	Surge arrester + disconnector						
iPRF1 12.5r Type <div><div>1</div><div>2</div></div>										
	1P+N	4	12.5/50 N/PE		50	25	1.5	230	350	A9L16632
	3P+N	8	12.5/50 N/PE		50	25	1.5	230 / 400	350	A9L16634
Withdrawable surge arrester										
PRD1 25r Type <div><div>1</div><div>2</div></div>										
	1P+N	8	25/100 N/PE		40	25	1.5	230/400	350	16330
	3P+N	16	25/100 N/PE		40	25	1.5	230/400	350	16332
PRD1 Master Type <div><div>1</div></div>										
	1P+N	8	25/100 N/PE		-	25	1.5	230/400	350	16361
	3P+N	16	25/100 N/PE		-	25	1.5	230/400	350	16363
Spare cartridge										
C1 Master-350	-	4	-	-	-	25	1.5	-	350	16314
C1 25-350	-	23 mm	-	-	-	25	1.5	-	350	16315
C2 40-350	-	12 mm	-	-	-	20	1.4	-	350	16316
C1 Neutral-350	-	4	-	-	-	-	-	-	350	16317

Surge arresters	Spare cartridge		
	Phase		Neutral
	Type 1	Type 2	
PRD1 25r			
PRD1 25r 1P+N	16315	16316	16317
PRD1 25r 3P	3 x 16315	3 x 16316	-
PRD1 Master			
PRD1 Master 1P+N	16314	-	16317
PRD1 Master 3P+N	3 x 16314	-	16317

DB123370



Accessories		
Type	Number of poles	
4P Wiring comb busbars	4	16643
6P Wiring comb busbars	6	16644
8P Wiring comb busbars	8	16645
200 mm flexible cable (PRF1 Master)		16646

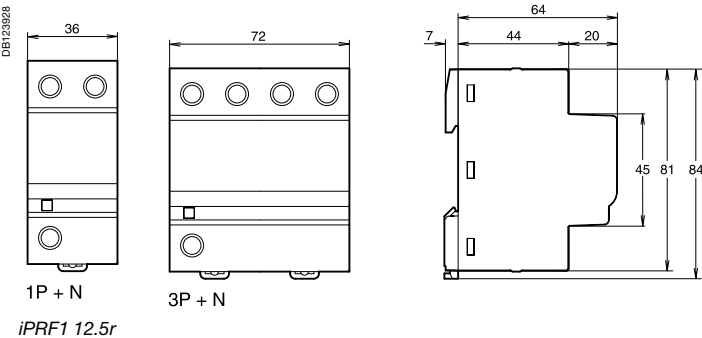
Technical data

		iPRF1 12.5r	PRF1 Master	PRD1 25r	PRD1 Master
Operating frequency		50 Hz	50/60 Hz	50 Hz	50 Hz
Degree of protection	Front panel	IP40	IP40	IP40	IP40
	Terminals	IP20	IP20	IP20	IP20
	Impacts	IK05	IK05	IK05	IK05
Response time		≤ 25 ns	≤ 1 μs	≤ 25 ns	≤ 100 ns
End-of-life indication		Green: correct operation	-	White: correct operation	White: correct operation
		Red: at end of life	-	Red: at end of life	Red: at end of life
	Remote notification	1.5 A/250 V AC	-	1 A/250 V AC. 0.2 A/125 V DC	1 A/250 V AC. 0.2 A/125 V DC
By tunnel terminal	Rigid cable	10...35 mm ²	10...50 mm ²	2.5...35 mm ²	10...35 mm ²
	Flexible cable	10...25 mm ²	10...35 mm ²	2.5...25 mm ²	10...25 mm ²
Operating temperature		-25°C to +60°C	-40°C to +85°C	-25°C to +60°C	-25°C to +60°C
Standards	Type 1	IEC 61643-1 [T1]. EN 61643-11 Type 1	IEC 61643-1 [T1]. EN 61643-11 Type 1	IEC 61643-1 [T1]. EN 61643-11 Type 1	IEC 61643-1 [T1]. EN 61643-11 Type 1
	Type 2	IEC 61643-1 [T2]. EN 61643-11 Type 2	-	IEC 61643-1 [T2]. EN 61643-11 Type 2	-
Certification		CE	KEMAKEUR, CE	KEMAKEUR, CE	CE

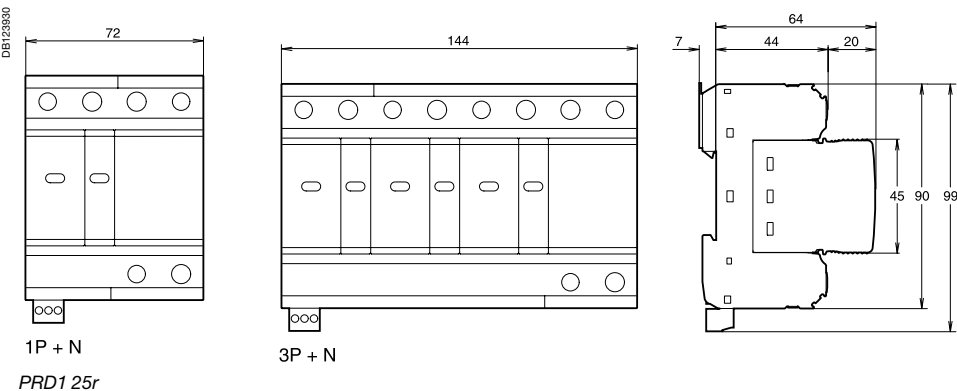
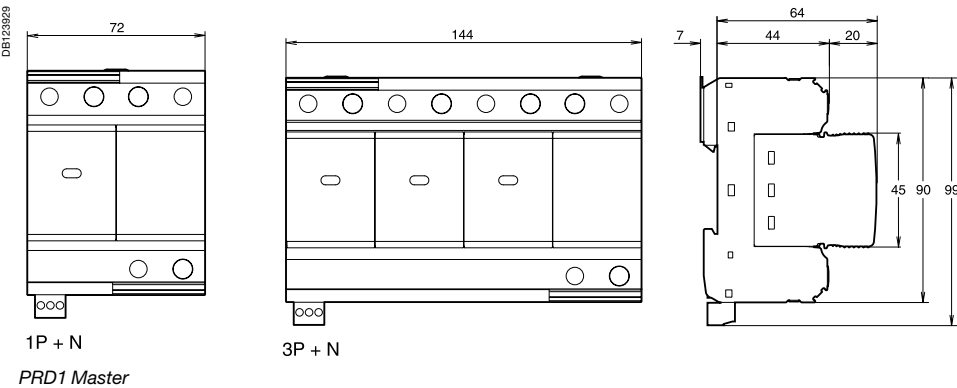
Choice of disconnecter / surge arrester

Type	Iimp :impulse current	Isc: prospective short-circuit current at the installation point				
		10 kA	15 kA	25 kA	36 kA	50 kA
iPRF1 12.5r	12.5 kA	C120N 80 A curve C	C120H 80 A curve C or NG125N 80 A curve C	NG125N 80 A curve C	NG125H 80 A curve C	NG125L 80 A curve C
PRF1 Master	35 kA	Compact NSX160B 160 A TM			Compact NSX160F 160 A	Compact NSX160N 160 A
PRD1 25r	25 kA	NG125N 80 A curve C			-	
PRD1 Master	25 kA	NG125N 80 A curve C			NG125H 80 A curve C	NG125L 80 A curve C

Dimensions (mm)



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Protection

Load protection

iPRD, iPRD IT surge arresters

PB110281-60

Satisfactory operation indication

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

- Transfer to Acti 9 Smartlink

Terminals
■ IP20



4

Connection iPRD surge arrester with its short circuit disconnecter

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

PB110288-50

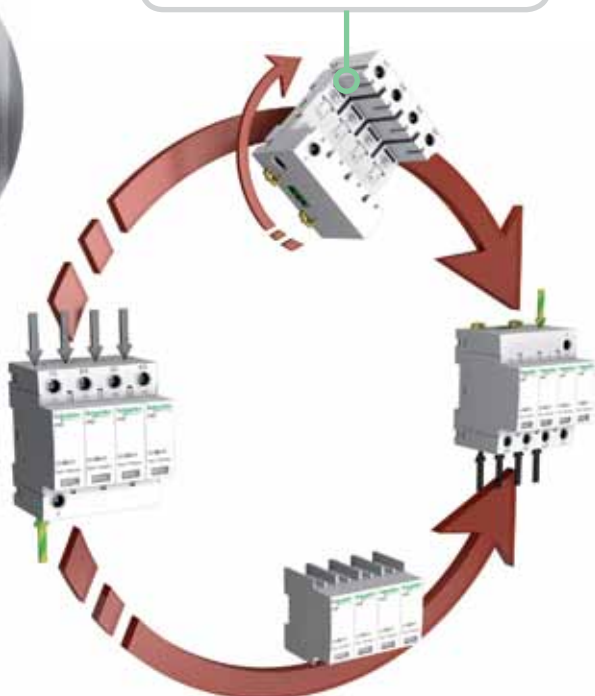
PB110793-50



Surge arrester iPRD 3P+N + iC60 3P+N for TT or TN-S (Incoming through the top without comb busbar)

Surge arrester iPRD 3P+N + iC60 3P+N for TT or TN-S (Incoming through the bottom with comb busbar)

PB110287-60



Protection

Load protection

iPRD surge arresters

Type 2 or 3 LV withdrawable surge arrester

iPRD withdrawable surge arresters allow quick replacement of damaged cartridges.



1P+N



3P+N



Cartridge

Rated discharge current (I _{max}) / Nominal discharge current (I _n)	Type of protection		Network		Earthing system	Transfer	Surge arrester name	Width in mod. of 9 mm
	Incoming	Secondary	1P+N	3P+N				
65 kA / 20 kA							iPRD65	
Very high risk level (strongly exposed site)	iPRD65		A9L16557		TT & TN-S	■	iPRD65r 1P+N	4
				A9L16559	TT & TN-S	■	iPRD65r 3P+N	8
40 kA / 15 kA							iPRD40	
High risk level	iPRD40		A9L16562		TT & TN-S	■	iPRD40r 1P+N	4
			A9L16567		TT & TN-S		iPRD40 1P+N	
				A9L16564	TT & TN-S	■	iPRD40r 3P+N	8
				A9L16569	TT & TN-S		iPRD40 3P+N	
20 kA / 5 kA							iPRD20	
Medium risk level	iPRD20		A9L16672		TT & TN-S	■	iPRD20r 1P+N	4
			A9L16572		TT & TN-S		iPRD20 1P+N	
				A9L16674	TT & TN-S	■	iPRD20r 3P+N	8
				A9L16574	TT & TN-S		iPRD20 3P+N	
8 kA / 2.5 kA							iPRD8 (1)	
Secondary protection: placed near the loads to be protected when they are at a distance of more than 30 m from the incoming surge arrester	iPRD8		A9L16677		TT & TN-S	■	iPRD8r 1P+N	4
			A9L16577		TT & TN-S		iPRD8 1P+N	
				A9L16679	TT & TN-S	■	iPRD8r 3P+N	8
				A9L16579	TT & TN-S		iPRD8 3P+N	

* **CM**: common mode (phase to earth and neutral to earth).

Spare cartridges		
Type	Spare cartridges for	Cat. no
C 65-340	iPRD65r	A9L16681
C 40-340	iPRD40, iPRD40r	A9L16685
C 20-340	iPRD20, iPRD20r	A9L16687
C 8-340	iPRD8, iPRD8r	A9L16689
C neutral	All products	A9L16691

Surge arrester/circuit breaker association	
Type of surge arrester	Associated circuit breaker
iPRD65	Curve C 50 A
iPRD40	Curve C 40 A
iPRD20	Curve C 25 A
iPRD8	Curve C 20 A

Up - (kV) Voltage protection level			Un - (V) Rated voltage network	Uc - (V) Maximum continuous operating voltage		
CM*		DM*		CM*		DM*
L/⊥	N/⊥	L/N		L/⊥	N/⊥	L/N

-	≤ 1.5	≤ 1.5	230	-	260	340
-	≤ 1.5	≤ 1.5	230/400	-	260	340

-	≤ 1.4	≤ 1.4	230	-	260	340
-	≤ 1.4	≤ 1.4	230	-	260	340
-	≤ 1.4	≤ 1.4	230/400	-	260	340
-	≤ 1.4	≤ 1.4	230/400	-	260	340

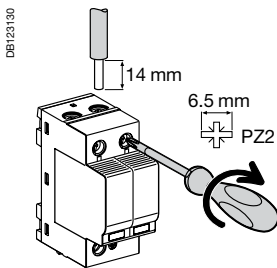
-	≤ 1.4	≤ 1.1	230	-	260	340
-	≤ 1.4	≤ 1.1	230	-	260	340
-	≤ 1.4	≤ 1.1	230/400	-	260	340
-	≤ 1.4	≤ 1.1	230/400	-	260	340

Type 2 / Type 3

-	≤ 1.4 / ≤ 1	≤ 1 / ≤ 1.1	230	-	260	340
-	≤ 1.4 / ≤ 1	≤ 1 / ≤ 1.1	230	-	260	340
-	≤ 1.4 / ≤ 1	≤ 1 / ≤ 1.1	230/400	-	260	340
-	≤ 1.4 / ≤ 1	≤ 1 / ≤ 1.1	230/400	-	260	340

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

Connection



Type	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
iPRD	2 N.m	2.5 to 25 mm ²	2.5 to 16 mm ²

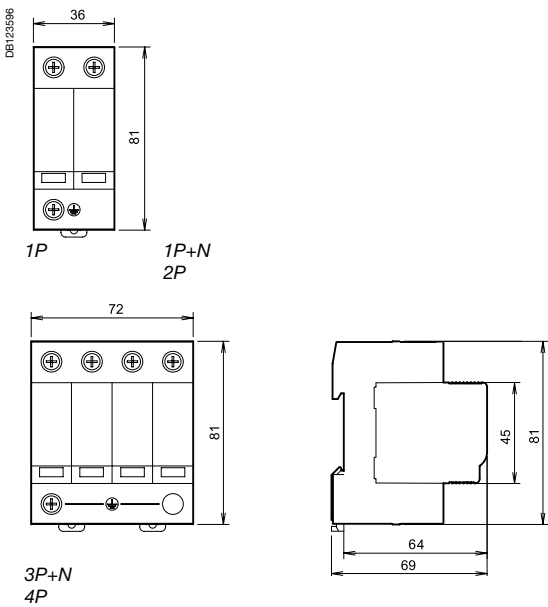
Technical data

Main characteristics		
Operating frequency		50/60 Hz
Operating voltage (Ue)		230/400 V AC
Permanent operating current (Ic)		< 1 mA
Response time		< 25 ns
End of life indication: by mechanical indicator	White	In operation
	Red	At end of life
End of life remote indication		By contact NO, NC 250 V / 0.25 A
Additional characteristics		
Operating temperature		-25°C to +60°C
Type of connection terminals		Tunnel terminals, 2.5 to 35 mm²
Standards		IEC 61643-1 T2 and EN 61643-11 Type 2

Weight (g)

Surge arrester	
Type	iPRD
1P	115
2P	220
3P	340
4P	450

Dimensions (mm)



Surge protection

Load protection

Withdrawable surge arrester

iQuick PRD Type 2 or Type 3

Withdrawable surge arrester iQuick PRD allow damaged cartridges to be replaced quickly. They offer remote reporting of the "cartridge must be changed" message.



Replacement cartridges.

IEC 61643- 1 T2, EN 61643-11 Type 2

They protect electrical and electronic equipment against lightning-induced surges. Withdrawable surge arrester iQuick PRD surge arresters are prewired, incorporating their end-of-life disconnecter.

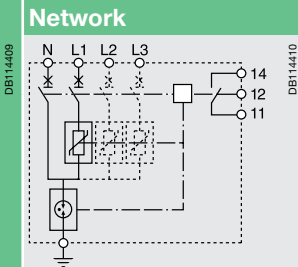
Each surge arrester in the range has a specific use:

■ incoming protection (type 2):

- iQuick PRD40r is recommended for a high risk level
- iQuick PRD20r is recommended for a moderate risk level

■ secondary protection (type 2 or 3):

- iQuick PRD8r provides secondary protection for the loads to be protected and is cascade-mounted with the incoming surge arresters. This surge arrester is required as close as possible to the loads to be protected when they are located more than 30 metres away from the incoming surge arrester.

Maximum discharge current (Imax) / Nominal discharge current (In)	Type of protection		Network		
	Incoming protection	Secondary protection	1P+N	3P+N	
					
40 kA / 20 kA					
High risk level	iQuick PRD40r		A9L16292		
				A9L16294	
20 kA / 5 kA					
Moderate risk level	iQuick PRD20r		A9L16295		
				A9L16297	
8 kA / 2 kA					
Secondary protection: placed near the loads to be protected when they are at a distance of more than 30 m from the incoming surge arrester		iQuick PRD8r	A9L16298		
				A9L16300	

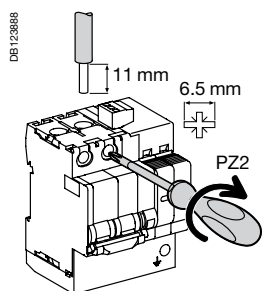
Replacement cartridges



Type	Replacement cartridges for	Cat. no.
C 40-350	iQuick PRD40r	A9L16310
C 20-350	iQuick PRD20r	A9L16311
C 8-350	iQuick PRD8r	A9L16312
C neutral-350	All products	A9L16313

Surge protection Load protection

Withdrawable surge arrester iQuick PRD Type 2 or Type 3 (cont.)

Connection



Type	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
iQuick PRD	2.5 N.m		
		2.5 to 25 mm ²	2.5 to 25 mm ²
		2.5 to 35 mm ²	2.5 to 35 mm ²
		25 mm ² max.	25 mm ² max.

Earthing system	Transfert	Name of surge arrester	Width in 9 mm modules	Up – (kV) Voltage protection level			Un – (V) Nominal mains voltage	Uc – (V) Maximum continuous operating voltage		
				CM*		DM*		CM*		DM*
				L/≡	N/≡	L/N		L/≡	N/≡	L/N
iQuick PRD40r										
TT & TN-S	■	1P+N	8	1.5	1.5	2.5	230	-	264	350
TT & TN-S	■	3P+N	15	1.5	1.5	2.5	230/400	-	264	350
iQuick PRD20r										
TT & TN-S	■	1P+N	8	1.5	1.5	1.5	230	-	264	350
TT & TN-S	■	3P+N	15	1.5	1.5	1.5	230/400	-	264	350
iQuick PRD8r (2) Type 2 / Type 3										
TT & TN-S	■	1P+N	8	1.5/1.4	1.5/1.5	1.2/1.4	230	-	264	350
TT & TN-S	■	3P+N	15	1.5/1.4	1.5/1.5	1.2/1.4	230/400	-	264	350

* **CM** common mode (between phase/earth and neutral/earth). * **DM**: differential mode (between phase and neutral).

(1) Up (MCB + SPD): total value measured between Modular Circuit Breaker (MCB) terminal block and PE surge arrester device terminal block (SPD).

(2) Uoc: open-circuit voltage in combined wave: 10 kV.

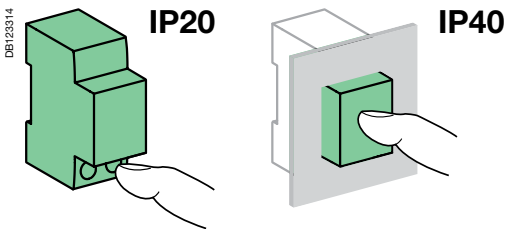
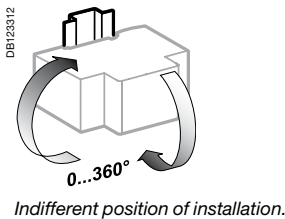
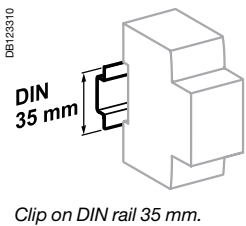


Pragma: the earth terminal block needs 1 support kit and 1 terminal block kit.

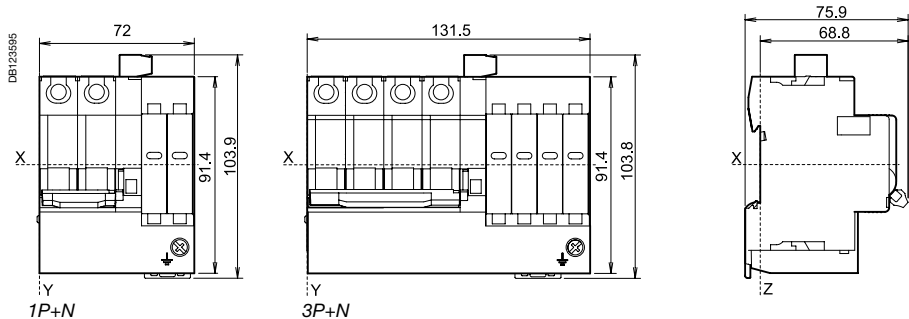
Accessories

Earth terminal block support

Type			Cat. no.
Support kit	L = 4 blocks	Batch of 1	PRA90053
25 mm ² terminal block kit	L = 1 block	Batch of 5	PRA90046



Dimensions (mm)



Technical data

Main characteristics			
Operating frequency	50/60 Hz		
Operating voltage (Ue)	230/400 V AC		
Disconnecter short-circuit withstand (Isc)	25 kA (50 Hz)		
Permanent operating current (Ic)	<1 mA		
Response time	<25 ns		
Status indication	By the cartridges	White	Operational
		Red	At end of life
	By white mechanical indicator/ handle ON		Operational
	By red mechanical indicator/ handle OFF		At end of life
Remote indication end of life	By the NO/NC remote indication contact 250 V AC / 2 A		
Additional characteristics			
Degree of protection	Device only	IP20, IK05	
	Device in modular enclosure	IP40	
Operating temperature	-25°C to +70°C		
Storage temperature	-40°C to +80°C		
Certifications	NF, KEMA KEUR (iQuick PRD 8r, 20r)		

Weight (g)

Surge arresters		
Type	iQuick PRD8r/20r	iQuick PRD40r
1P+N	435	445
3P+N	810	850



IEC 61643-1 T2
EN 61643-11 Type 2
UTE C 61740-51 T2
prEN 50539-11 T2



iPRD-DC40r 600PV

iPRD-DC direct current surge arresters are designed to protect against overvoltages due to a lightning strike: of the "DC" input to the inverter and of photovoltaic panels.

It should be installed in a switchboard inside the building. If the switchboard is located outside, it must be weatherproof.

Withdrawable iPRD-DC surge arresters allow damaged cartridges to be replaced quickly.
They offer remote reporting of the "cartridge must be changed" message.

Catalogue numbers

Internal diagram	I _{max} (kA) Maximum discharge current	I _n (kA) Nominal discharge current	U _p (kV) Protection level			U _{CPV} (V) ⁽¹⁾ Maximum steady state voltage			Width in module of 9 mm	Cat. no.
			L+/ $\overline{\text{L}}$	L-/ $\overline{\text{L}}$	L+/L-	L+/ $\overline{\text{L}}$	L-/ $\overline{\text{L}}$	L+/L-		
iPRD-DC40r 600PV										
<div>DB124051</div>										

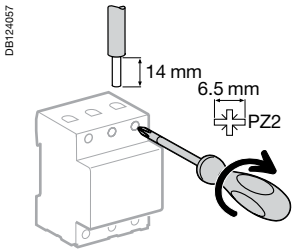
(1) Ucpv ≥ 1.2 x Uoc stc (Uoc stc: maximum no-load voltage of the photovoltaic generator "photovoltaic module manufacturer's data")



Replacement cartridges

Replacement cartridges		
Type	Replacement cartridges for	Cat. no.
C 40-600PV	iPRD-DC40r 600PV	A9L16683
C 40-1000PV	iPRD-DC40r 1000PV	A9L16692
C neutral PV	iPRD-DC40r 600PV	A9L16690

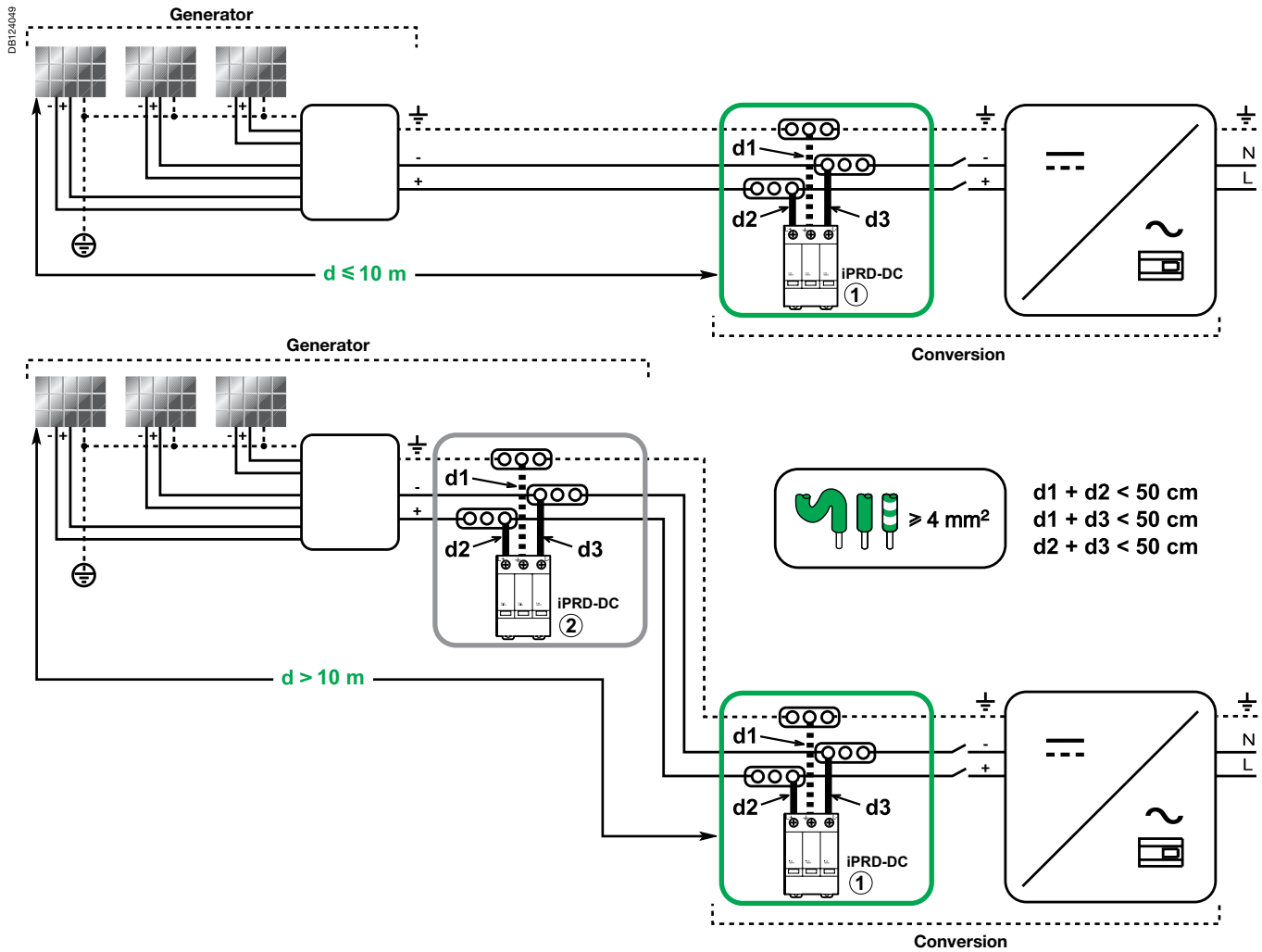
Connection

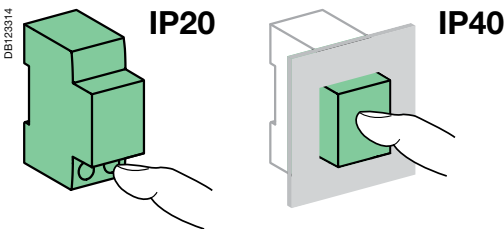
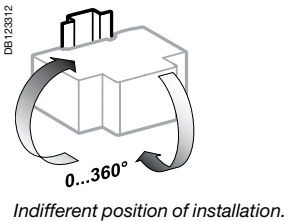
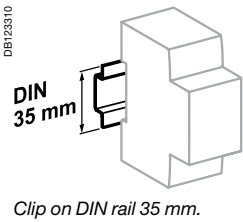


Type	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
iPRD-DC	2 N.m	2.5 to 25 mm ²	2.5 to 16 mm ²

4

Depending on the distance between the "generator" part and the "conversion" part, it may be necessary to install two surge arresters or more, to ensure protection of each of the two parts.





Technical data

Main characteristics			
Type of network		Isolated direct current	
Temps de réponse		< 25 ns	
Short circuit current (I_{SCPV})		30 A	
Type of surge arresters		Type 2	
Type of self-protection		Circuit opened by integrated thermal disconnector	
Additional characteristics			
Degree of protection (IEC 60529)	Device only	IP20	
	Device in modular enclosure	IP40	
	Chocs	IK03	
End-of-life indication	By the cartridges	White	Operational
		Red	At end of life
	By the NO/NC remote indication contact 250 V AC / 0.25 A		
Operating temperature		-25°C to +60°C	
Storage temperature		-40°C to +85°C	
Tropicalization (IEC 60068-1)		Treatment 2 (relative humidity of 95 % at 55°C)	

Weight (g)

Surge arresters	
Type	
iPRD-DC40r 600PV	400
iPRD-DC40r 1000PV	400

Dimensions (mm)

