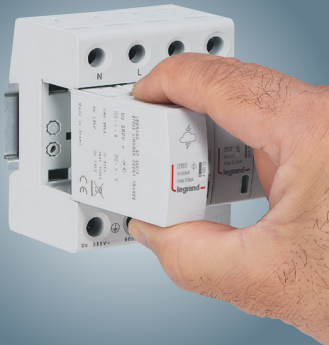


ENHANCED PROTECTION, SIMPLIFIED INSTALLATION AND MAINTENANCE



SPDs FOR
RESIDENTIAL,
COMMERCIAL,
INDUSTRIAL AND
PHOTOVOLTAIC
INSTALLATIONS



#legrandImprovingLives

legrand®

PROTECTION WITH PEACE OF MIND

Surge protective devices (SPDs) are essential for protecting electrical systems against overvoltages caused by lightning. They are designed to detect and divert overvoltages to earth to limit the risk of equipment damage or failure, fire or explosion.

By protecting electrical equipment in this way, SPDs help to extend the useful life of devices and ensure continuity of service.

Legrand's new range of SPDs offers solutions suitable for all types of installation and all risk levels, ensuring optimal protection and compliance with current standards.





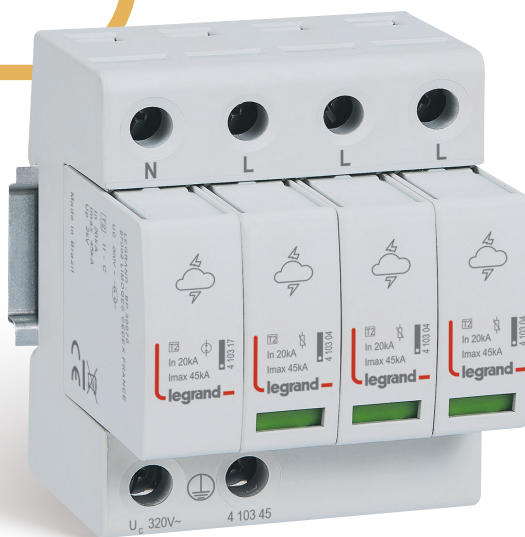
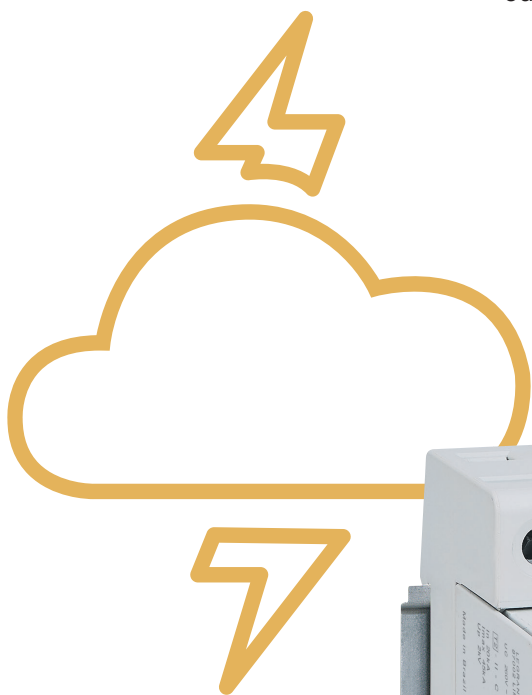
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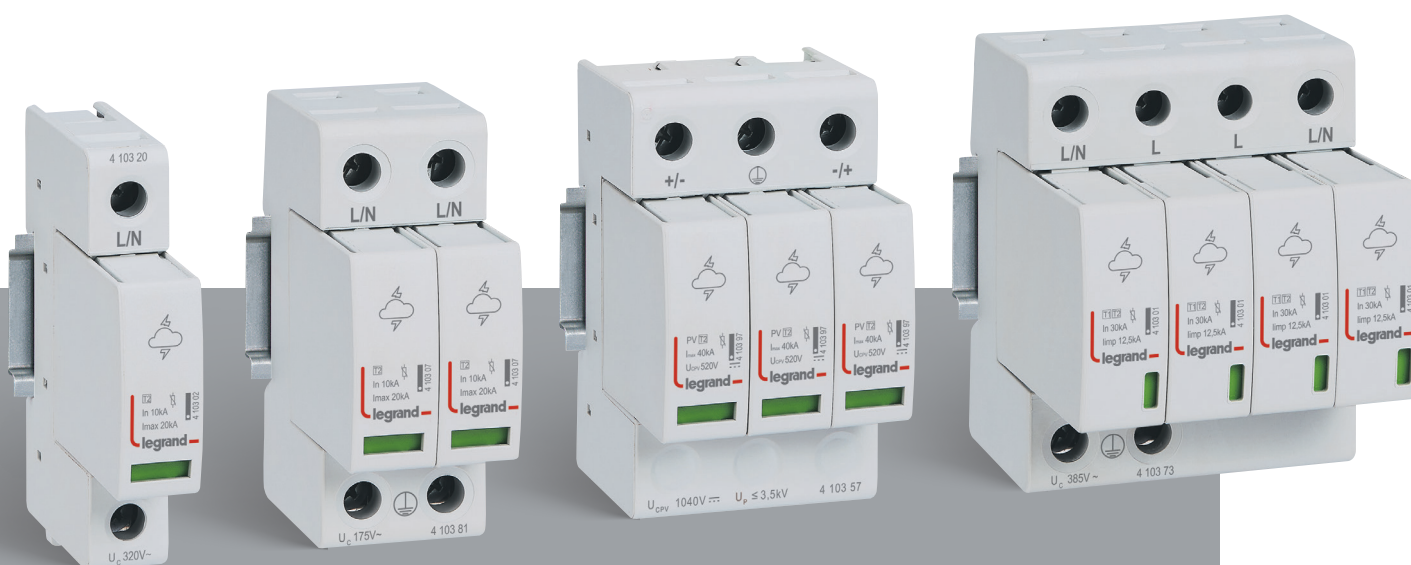
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AN EXTENSIVE RANGE SUITABLE FOR ALL APPLICATIONS

With its new range of surge protective devices, Legrand provides solutions suitable for all types of installation and all risk levels. Legrand's new SPDs ensure optimum protection for electronic equipment while providing a universal solution suited to the installation practices of all markets.



CONFORMING TO STANDARD EN/IEC 61643-11

The entire range of Legrand SPDs
conforms to standard EN/IEC 61643-11

T1 SPDs

are designed to provide protection in the main distribution board.

T1+T2 SPDs

are increasingly used at the supply end of installations and comply with the specifications of both T1 and T2 SPDs.

T2 SPDs

typically provide protection in secondary distribution boards or consumer units.

**The only way to discharge all the initial energy
is to install SPDs at every level of the
installation.**



SPDs FOR PHOTOVOLTAIC INSTALLATIONS

NEW Type	Type 2 (T2) - DC	
		
	2P	
	Number of poles	
	I_{imp} (kA)	-
	I_n (kA)	18
	I_{max} (kA)	40
	U_c (V=)	1500
		1040



SPDs WITHOUT SHORT-CIRCUIT PROTECTION

NEW Type	Type 1 + Type 2 (T1+T2)						Type 2 (T2)									
																
	1P, 1P+N, 2P, 3P, 3P+N, 4P						1P N-PE		1P, 1P+N, 2P, 3P, 3P+N, 4P						1P N-PE	
	Number of poles															
	I_{imp} (kA)		35 ⁽¹⁾	25 ⁽²⁾	12.5		25 ⁽³⁾	50 ⁽⁴⁾	-	-	-	-	-	-	-	-
	I_n (kA)		35 ⁽¹⁾	25 ⁽²⁾	30	30	30 ⁽³⁾	30 ⁽⁴⁾	20		10				20 ⁽³⁾⁽⁴⁾	10 ⁽³⁾⁽⁴⁾
	I_{max} (kA)		50 ⁽¹⁾	50 ⁽²⁾	60	60	60 ⁽³⁾	60 ⁽⁴⁾	45		20				45 ⁽⁴⁾	20 ⁽⁴⁾
	U_c (VA)		440 ⁽¹⁾	350 ⁽²⁾	385	175	260 ⁽³⁾	260 ⁽⁴⁾	460 ⁽⁵⁾	320	175	460 ⁽⁵⁾	320	175	260 ⁽³⁾⁽⁴⁾	260 ⁽³⁾⁽⁴⁾

(1) Only available in 1P version (2) Only available in 1P+N, 3P and 3P+N versions (3) For 1P+N system (4) For 3P+N systems
(5) Only available in 1P, 2P, 3P and 4P versions



See pages 8 to 14 for more information



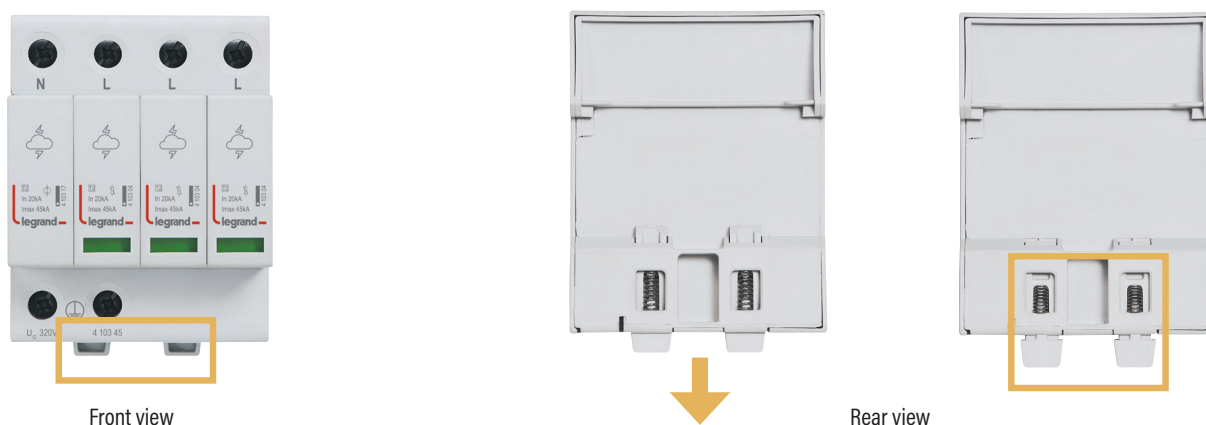
QUICK AND EASY INSTALLATION

FOR GREATER COMPETITIVENESS

From bistable locking clips for easy installation and secure, durable connections, to clear, easily identifiable markings, the features of Legrand's new range of SPDs offer a high degree of flexibility when it comes to installation.

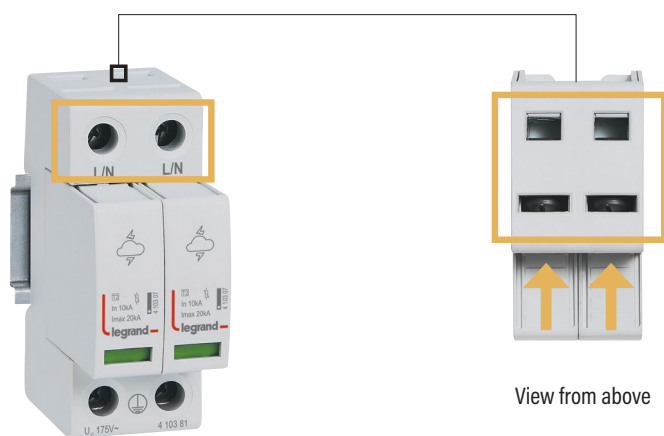
BISTABLE LOCKING CLIPS

These allow easy mounting and removal of SPDs on a DIN rail as required. They are compatible with flat-head screwdrivers and make installation quick and easy.



SECURE CONNECTIONS

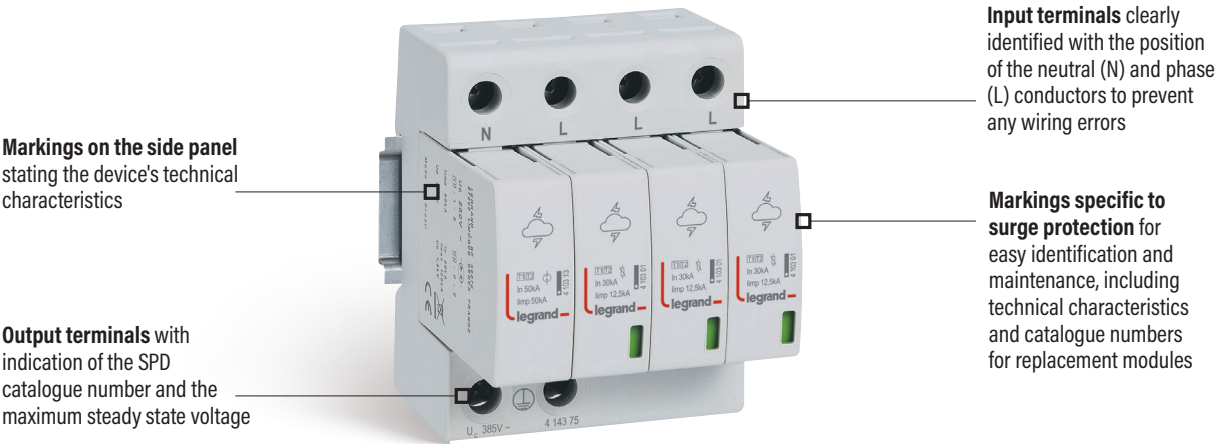
Robust screw terminals provide a durable connection. The screw head is designed with both flat-head and Phillips slots, allowing installers to use either type of screwdriver according to preference.





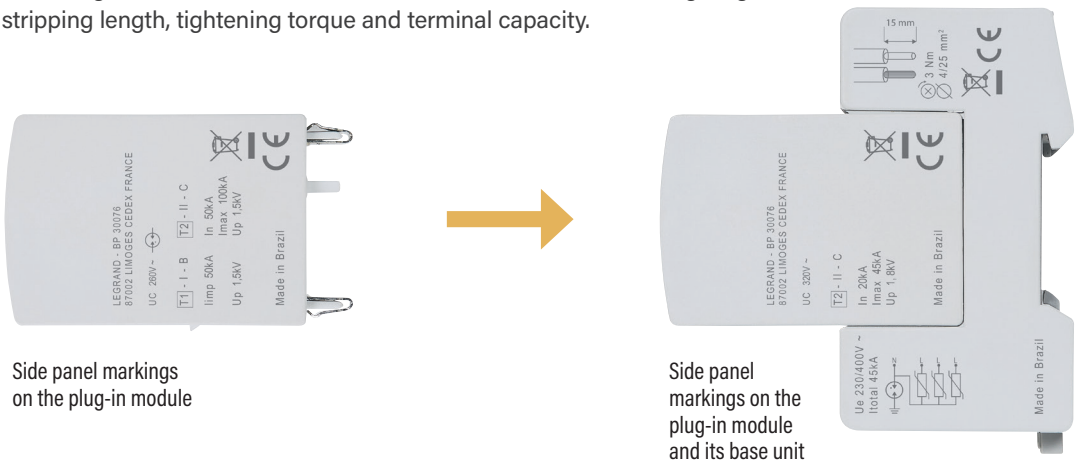
CLEAR, COMPREHENSIVE MARKINGS FOR EASY WIRING

With clear, easily identifiable markings for easier maintenance and a design in line with Legrand MCBs, the new SPDs integrate seamlessly in the modular rows in distribution boards.



SIDE PANEL MARKINGS

These markings include the device's full technical characteristics, wiring diagram, wire stripping length, tightening torque and terminal capacity.





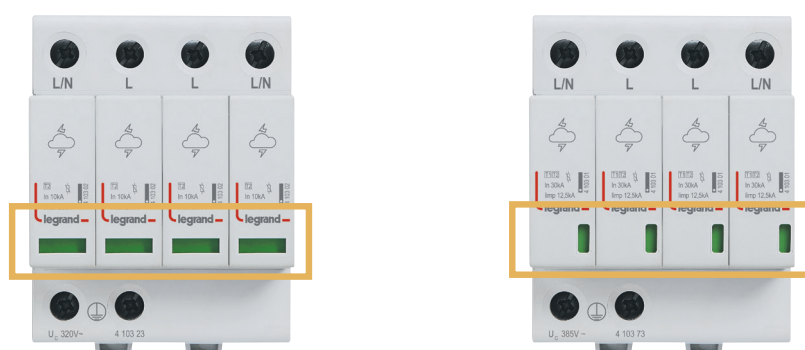
OPERATION

PROVIDING PROTECTION WITH COMPLETE PEACE OF MIND

Legrand's new SPDs are designed to provide continuity of service and enhance the safety of your installations.

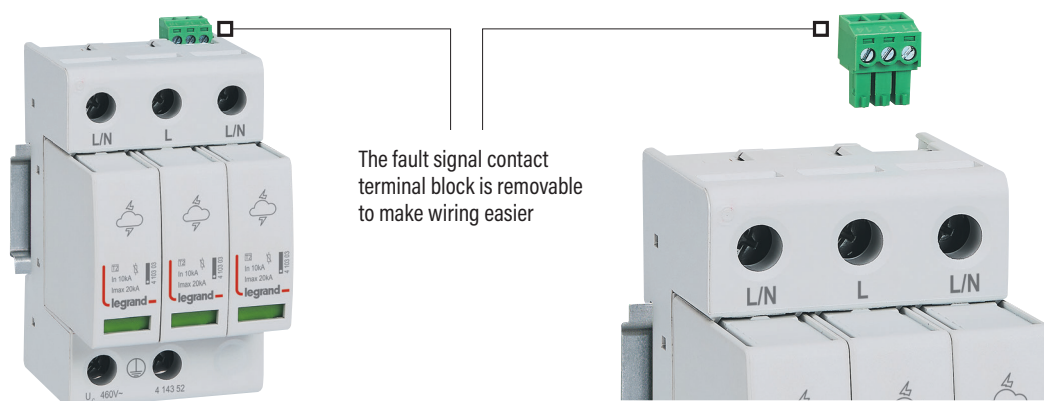
STATUS INDICATOR

A status indicator on the front of the module indicates whether the SPD is operational (green) or out of service (red) and needs to be replaced.



REMOTE FEEDBACK

The fault signal contact integrated on some of the devices in the range allows real-time monitoring of SPD status to facilitate maintenance and ensure continued installation protection.



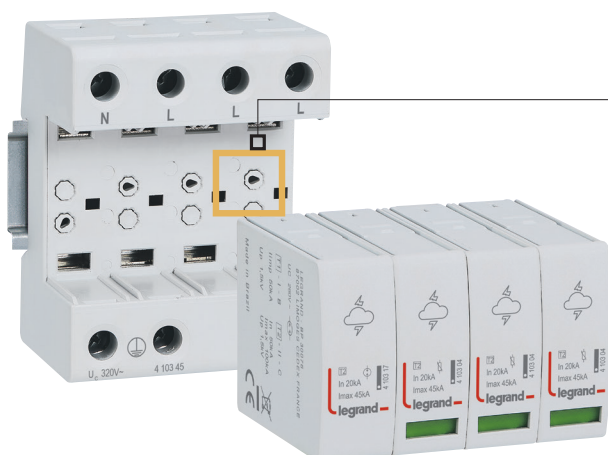
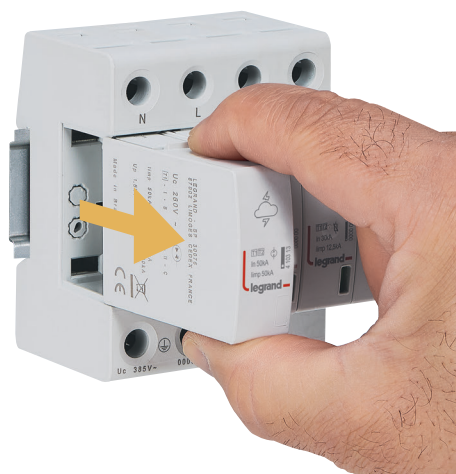


QUICK, EASY AND SAFE MAINTENANCE

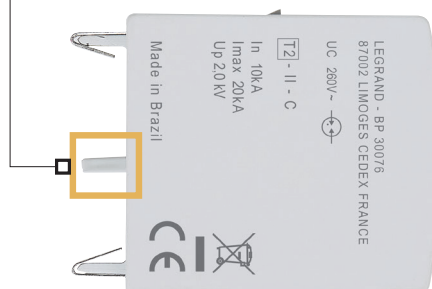
The plug-in modules can be replaced individually without the need for any tools, which helps to reduce maintenance costs.



Plug-in module

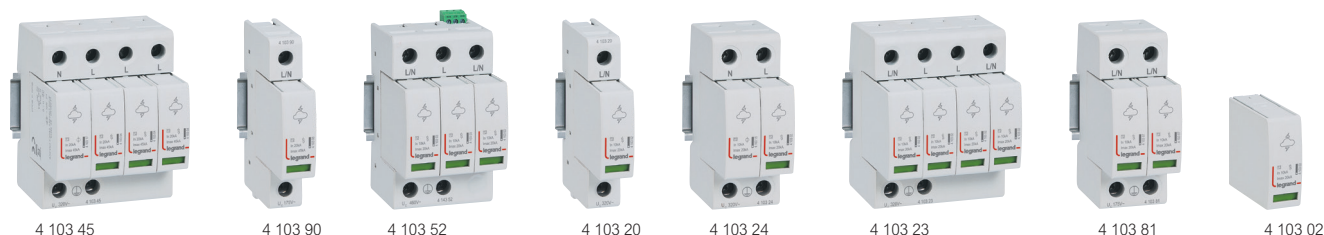


The recesses on the SPD base unit are an exact match for the foolproofing pins on the back of the plug-in modules to prevent any errors when replacing modules.



Type 2 (T2) SPDs

without short-circuit protection



Technical characteristics p.12 to 15

1P+N and 3P+N SPDs have encapsulated spark gap technology on the neutral-earth line, which prevents earth leakage currents: no unwanted tripping of the residual current protection devices

These SPDs can be installed upstream the main earth leakage module

SPDs with plug-in modules and status indicators for neutral-earth spurs of xP+Ns and for all neutral-earth spurs of xPs:

- Green: SPD working

- Red: plug-in modules need to be replaced

Conforming to standards EN/IEC 61643-11

SPDs without short-circuit protection

Pack	Cat.Nos				
		T2 - I_{max} 45 kA - U_c 460 V~			
		Up 2.5 kV, U _c 460 V~			
		Type 2 characteristic: In 10 kA, I _{max} 20 kA			
		Neutral earthing systems: TT, TN, IT (PN < 120 V)			
		Protection against short-circuited end of life to be added: gG/gL fuse: 80 A			
		Number of poles	Neutral position	Status feedback (SD auxiliary)	Number of modules
1	4 143 60	1P	-	Yes	1
1	4 143 61	2P	-	Yes	2
1	4 143 62	3P	-	Yes	3
1	4 143 63	4P	-	Yes	4
		T2 - I_{max} 45 kA - U_c 320 V~			
		Up 1.8 kV, U _c 320 V~			
		Type 2 characteristic: In 20 kA, I _{max} 45 kA			
		Neutral earthing systems: TT, TN			
		Protection against short-circuited end of life to be added: gG/gL fuse: 80 A			
1	4 103 40	1P	-	No	1
1	4 103 44	1P+N	Left	No	2
1	4 143 44	1P+N	Left	Yes	2
1	4 103 41	2P	-	No	2
1	4 103 42	3P	-	Yes	3
1	4 103 45	3P+N	Left	No	4
1	4 143 45	3P+N	Left	Yes	4
1	4 103 43	4P	-	No	4
		T2 - I_{max} 45 kA - U_c 175 V~			
		Up 1.2 kV, U _c 175 V~			
		Type 2 characteristic: In 20 kA, I _{max} 45 kA			
		Neutral earthing systems: TT, TN			
		Protection against short-circuited end of life to be added: gG/gL fuse: 80 A			
1	4 103 90	1P	-	No	1
1	4 103 94	1P+N	Left	No	2
1	4 143 94	1P+N	Left	Yes	2
1	4 103 91	2P	-	No	2
1	4 103 92	3P	-	No	3
1	4 103 95	3P+N	Left	No	4
1	4 143 95	3P+N	Left	Yes	4
1	4 103 93	4P	-	No	4
		T2 - I_{max} 20 kA - U_c 460 V~			
		Up 2 kV, U _c 460 V~			
		Type 2 characteristic: In 20 kA, I _{max} 45 kA			
		Neutral earthing systems: TT, TN, IT (PN < 120 V)			
		Protection against short-circuited end of life to be added: gG/gL fuse: 80 A			
1	4 143 50	1P	-	Yes	1
1	4 143 51	2P	-	Yes	2
1	4 143 52	3P	-	Yes	3
1	4 143 53	4P	-	Yes	4

SPDs without short-circuit protection (continued)

		T2 - I_{max} 20 kA - U_c 320 V~			
		Up 1.2 kV, U _c 320 V~			
		Type 2 characteristic: In 10 kA, I _{max} 20 kA			
		Neutral earthing systems: TT, TN			
		Protection against short-circuited end of life to be added: gG/gL fuse: 80 A			
		Number of poles	Neutral position	Status feedback (SD auxiliary)	Number of modules
1	4 103 20	1P	-	No	1
1	4 103 24	1P+N	Left	No	2
1	4 143 24	1P+N	Left	Yes	2
1	4 103 21	2P	-	No	2
1	4 103 22	3P	-	No	3
1	4 103 25	3P+N	Left	No	4
1	4 143 25	3P+N	Left	Yes	4
1	4 103 23	4P	-	No	4
		T2 - I_{max} 20 kA - U_c 175 V~			
		Up 0.8 kV, U _c 175 V~			
		Type 2 characteristic: In 10 kA, I _{max} 20 kA			
		Neutral earthing systems: TT, TN			
		Protection against short-circuited end of life to be added: gG/gL fuse: 80 A			
1	4 103 80	1P	-	No	1
1	4 103 84	1P+N	Left	No	2
1	4 143 84	1P+N	Left	Yes	2
1	4 103 81	2P	-	No	2
1	4 103 82	3P	-	No	3
1	4 103 85	3P+N	Left	No	4
1	4 143 85	3P+N	Left	Yes	4
1	4 103 83	4P	-	No	4
		Plug-in replacement modules			
1	4 103 05	For T2/45 kA U _c 460 V~ SPDs			
		Cat.Nos 4 143 60/61/62/63			
1	4 103 04	For T2/45 kA U _c 320 V~ SPDs			
		Cat.Nos 4 103 40/41/42/43/44/45 and 4 143 44/45			
1	4 103 08	For T2/45 kA U _c 175 V~ SPDs			
		Cat.Nos 4 103 90/91/92/93/94/95 and 4 143 94/95			
1	4 103 03	For T2/20 kA U _c 460 V~ SPDs			
		Cat.Nos 4 143 50/51/52/53			
1	4 103 02	For T2/20 kA U _c 320 V~ SPDs			
		Cat.Nos 4 103 20/21/22/23/24/25 and 4 143 24/25			
1	4 103 07	For T2/20 kA U _c 175 V~ SPDs			
		Cat.Nos 4 103 80/81/82/83/84/85 and 4 143 84/85			
1	4 103 15	For T2/20 kA U _c 260 V~ 1P N-PE SPD and T2/20 kA SPDs (N-PE module) Cat.Nos 4103 24/25/84/85 and 4 143 14/24/25/84/85			
1	4 103 17	For T2/45 kA U _c 260 V~ 1P N-PE SPD and T2/45 kA SPDs (N-PE module) Cat.Nos 4 103 16/44/45/94/95 and 4 143 44/45/94/95			

Type 2 (T2) SPDs

without short-circuit protection (continued)



4 103 16



4 103 15



Technical characteristics p.12 to 15

1P+N and 3P+N SPDs have encapsulated spark gap technology on the neutral-earth line, which prevents earth leakage currents: no unwanted tripping of the residual current protection devices
These SPDs can be installed upstream the main earth leakage module
SPDs suitable for the high voltages
SPDs with plug-in modules and status indicators:
- Green: SPD working
- Red: plug-in modules need to be replaced
Conforming to standards EN/IEC 61643-11

Pack	Cat.Nos	Spark gap SPDs without short-circuit protection for N-PE applications			
1	4 103 14	T2 - I_{max} 20 kA - U_c 260 V_~ for 1P+N installations Up 2 kV, U _c 260 V _~ Type 2 characteristic: I _n 20 kA, I _{max} 45 kA Neutral earthing systems: TT, TN To be used in combination with one or three 1P varistor SPD T2 I _{max} 20 kA U _c 175 V _~ or 385 V _~ Cat. Nos 4 103 20/80 to protect the neutral branch			
		Number of poles	Neutral position	Status feedback (SD auxiliary)	Number of modules
		1P N-PE	-	No	1
1	4 103 16	T2 - I_{max} 45 kA - U_c 260 V_~ for 1P+N installations Up 2 kV, U _c 260 V _~ Type 1 characteristics: I _{imp} 50 kA Type 2 characteristics: I _n 30 kA and I _{max} 60 kA Neutral earthing systems: TT, TN To be used in combination with one or three 1P varistor SPD T2 I _{max} 45 kA U _c 175 V _~ or 385 V _~ Cat. Nos 4 103 40/90 to protect the neutral branch			
		Number of poles	Neutral position	Status feedback (SD auxiliary)	Number of modules
		1P N-PE	-	No	1
Plug-in replacement modules					
1	4 103 15	For T2/20 kA U _c 260 V _~ 1P N-PE SPD and T2/20 kA SPDs (N-PE module) Cat.Nos 4103 24/25/84/85 and 4 143 14/24/25/84/85			
1	4 103 17	For T2/45 kA U _c 260 V _~ 1P N-PE SPD and T2/45 kA SPDs (N-PE module) Cat.Nos 4 103 16/44/45/94/95 and 4 143 44/45/94/95			

SPDs for photovoltaic applications



4 103 57



4 103 97



Technical characteristics p.12 to 15

SPDs suitable for photovoltaic applications
Protection on the direct current side of photovoltaic installations connected to the low voltage network (without energy storage system)
Conforming to UTE C 61-740-51 and UTE C 15-712-1 guides
Common mode and differential mode protection (prewired Y protection circuit: protections +/-, +/T, -/T)
SPDs with plug-in modules and status indicators:
- Green: SPD working
- Red: plug-in modules need to be replaced

Pack	Cat.Nos	SPDs without short-circuit protection		
1	4 103 58	T2 - I_{max} 40 kA - U_c 1500 V_~ Up 5 kV, U _c 1500 V _~ Type 2 characteristic: I _n 18 kA, I _{max} 40 kA		
		Number of poles	Neutral position	Number of modules
		2P	No	3
1	4 103 57	T2 - I_{max} 40 kA - U_c 1040 V_~ Up 3.5 kV, U _c 1040 V _~ Type 2 characteristic: I _n 18 kA, I _{max} 40 kA		
		Number of poles	Neutral position	Number of modules
		2P	No	3
Plug-in replacement modules				
1	4 103 98	For T2/40 kA U _c 1500 V _~ SPD Cat.No 4 143 58		
1	4 103 97	For T2/40 kA U _c 1040 V _~ SPD Cat.No 4 143 57		

Low-voltage SPDs

technical characteristics and installation

Lightning and overvoltage protection

- Protection against the effects of lightning essentially relies on:
- Protecting buildings by installing a lightning protection system (LPS or lightning conductor) that can capture the lightning and discharge the lightning current to earth
 - Use of SPDs to protect equipment
 - The earth network design (passive installation protection)

The external lightning protection system (LPS): lightning conductor

An external lightning protection system (LPS) protects buildings against lightning strikes. It is usually based on the use of lightning conductors (single rod, with sparkover device, meshed cage, etc) and/or the metal structure of the building

Standard EN/IEC 62305 defines 4 protection levels for these systems outside the building, depending on the site configurations, the activity and the geographical area

These levels involve the use of SPDs with minimum discharge performance

Lightning protection level I/II: Type 1 Iimp 25 kA (IT: Iimp 35 kA)

Lightning protection level III/IV: Type 1 Iimp 12.5 kA

The surge protective device (SPD)

Is used to:

- Protect sensitive devices against overvoltages due to lightning by limiting overvoltages to values the equipment can withstand
- Minimise any potentially harmful consequences for people's safety (home-based medical equipment, security or environmental systems, etc)
- Maximise equipment continuity of operation and minimise production losses

SPDs and standards

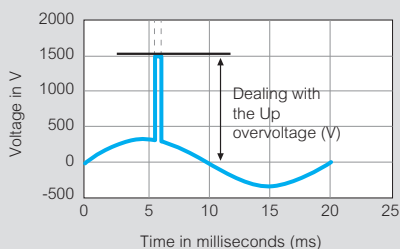
1 - Product standards EN 61643-11 and IEC 61643-11

There are 3 types of SPD, which are characterised according to 3 test types:

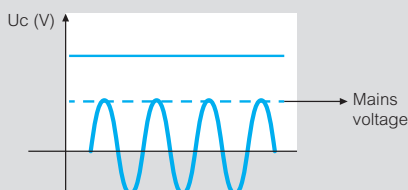
- Types 1 (T1), tested with a "long" current wave (10/350 μ s, high energy) whose maximum peak is Iimp
 - Types 2 (T2), tested with a "short" current wave (8/20 μ s) whose maximum peak is Imax or In
 - Types 3 (T3), tested with a short voltage wave (1.2/50 μ s), whose maximum peak is Uoc (similar wave to the 8/20 current wave of T2s)
- SPDs can be characterised as one of several types: Type 1 + Type 2 or Type 2 + Type 3

Other characteristics

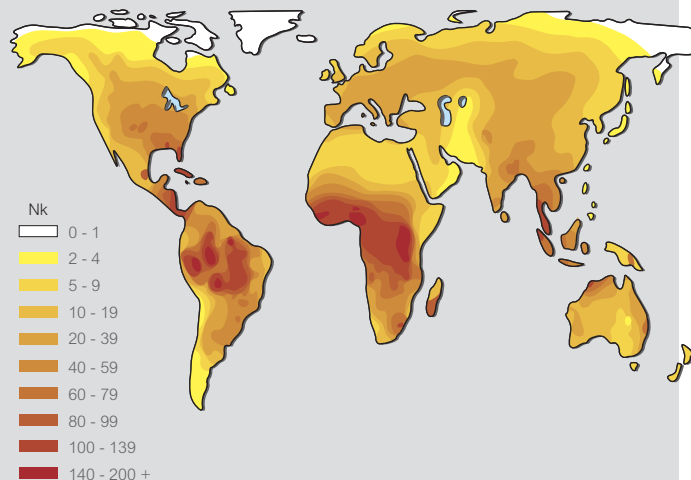
- Up protection voltage: maximum voltage at the SPD terminals while dealing with overvoltages



- Uc critical voltage: SPD ignition voltage. The mains voltage must always be less than this value (watch out for the double IT system fault: Uc must be > 400 V).



2 - Keraunic level (Nk)



Nk = Keraunic level (Number of days a year when thunder is heard at a given point)

The standards and risk analyses now rely on new data: Ng

Ng = lightning strike density expressed in Number of lightning strikes/km²/year

If there are no Ng measurements, it is possible to calculate Ng from the Nk with the following equation: Ng = Nk/10

3 - Installation standards

SPDs are dealt with by standards HD/IEC 60364-4-443 (selection of SPDs and mandatory aspects) and HD/IEC 60364-5-534 (installation)

The most recent versions (2015) insist on the use of SPDs in installations:

- where people are at risk (installations providing a security service, medical services, hospitals, etc)
- offering a public or cultural service (public service, communication exchanges, museums, religious buildings, etc)
- in the service sector and industry (hotels, banks, industries, shops, farms, etc)
- equipped with a Lightning Protection System (LPS, lightning conductor) or designed in accordance with EN/IEC 62305
- likely to hold a large number of people (apartment buildings, office buildings, schools, etc in Europe)

In the case of smaller installations (small shops, private houses, etc),

a risk analysis should be conducted (article 443.5)

Failing this, SPDs must be installed.

However, SPDs are not mandatory in private homes if the cost of installing it is more than a fifth of the cost of the installation.

Installing SPDs as per the recommendations of the installation standards.

Overall installation protection

In large installations, several SPDs are required for maximum overvoltage protection efficiency, especially if the SPD at the supply end has a Up protection level higher than 1.5 kV (EN 62305 and TS 61643-12)

As a general rule, it is advisable to install additional SPDs as well as the SPD installed at the supply end of the installation, when the equipment to be protected is more than 10 m away from the SPD at the supply end

In Commercial-Industrial buildings: this involves installing an SPD in secondary distribution boards if they are more than 10 m away from the main LV distribution board, and also protection devices close to the equipment if these are more than 10 m away from the secondary distribution board

In the home: Installation of a proximity SPD (T3 wall socket or multi-outlet type) if sensitive equipment is more than 10 m away from the protection board

Finally, as recommended in the installation standard, if there is a low-voltage SPD on the power circuit, we strongly recommend that an SPD is installed on the communication line (Cat.No 4 122 00)

Low-voltage SPDs

technical characteristics and installation

Distribution board SPDs without short-circuit protection

Degree of protection IP 20

1P+N (3P+N) SPDs: L-N and N-PE protection, also called mode 1+1 (3+1 resp.) or protection type CT2 as per the installation standards.

Cat.Nos	Type	Poles	Neutral earthing system	Max. voltage (Uc)	Protection mode	Nominal current In/pole (8/20)	Max. discharge current			Protection Level Up (L-N/L-PE/N-PE)	Protection to be added 1	SD auxiliary (status feedback)
							I _{max} /pole (8/20)	I _{imp} /pole (10/350)	I total (10/350)			
4 103 10	T1+T2/12.5kA	1P N-PE	TT, TN	260 V~	CT1	30 kA	60 kA	25 kA	25 kA	1.4	gG/gL fuse	no
4 103 12	T1+T2/12.5kA	1P N-PE	TT, TN	260 V~	CT1	30 kA	60 kA	50 kA	50 kA	1.5		no
4 103 14	T2/20kA	1P N-PE	TT, TN	260 V~		10 kA	20 kA	-	-	2		no
4 103 16	T2/45kA	1P N-PE	TT, TN	260 V~		20 kA	45 kA	-	-	2		no
4 103 20	T2/20kA	1P	TT, TN	320 V~	-	10 kA	20 kA	-	-	1.2		no
4 103 21	T2/20kA	2P	TT, TN	320 V~	CT1	10 kA	20 kA	-	-			no
4 103 22	T2/20kA	3P	TT, TN	320 V~	CT1	10 kA	20 kA	-	-			no
4 103 23	T2/20kA	4P	TT, TN	320 V~	CT1	10 kA	20 kA	-	-			no
4 103 24	T2/20kA	1P+N	TT, TN	320 V~	CT2	10 kA	20 kA	-	-			no
4 103 25	T2/20kA	3P+N	TT, TN	320 V~	CT2	10 kA	20 kA	-	-			no
4 103 40	T2/45kA	1P	TT, TN	320 V~	-	20 kA	45 kA	-	-	1.8		no
4 103 41	T2/45kA	2P	TT, TN	320 V~	CT1	20 kA	45 kA	-	-			no
4 103 42	T2/45kA	3P	TT, TN	320 V~	CT1	20 kA	45 kA	-	-			no
4 103 43	T2/45kA	4P	TT, TN	320 V~	CT1	20 kA	45 kA	-	-			no
4 103 44	T2/45kA	1P+N	TT, TN	320 V~	CT2	20 kA	45 kA	-	-			no
4 103 45	T2/45kA	3P+N	TT, TN	320 V~	CT2	20 kA	45 kA	-	-			no
4 103 70	T1+T2/12.5kA	1P	TT, TN	385 V~	-	30kA	60kA	12.5kA	12.5kA	1.9		no
4 103 71	T1+T2/12.5kA	2P	TT, TN	385 V~	CT1	30kA	60kA	12.5kA	25kA			no
4 103 72	T1+T2/12.5kA	3P	TT, TN	385 V~	CT1	30kA	60kA	12.5kA	37.5kA			no
4 103 73	T1+T2/12.5kA	4P	TT, TN	385 V~	CT1	30kA	60kA	12.5kA	50kA			no
4 103 74	T1+T2/12.5kA	1P+N	TT, TN	385 V~	CT2	30kA	60kA	12.5kA	25kA			no
4 103 75	T1+T2/12.5kA	3P+N	TT, TN	385 V~	CT2	30kA	60kA	12.5kA	50kA			no
4 103 80	T2/20KA	1P	TT, TN	175 V~	-	10kA	20kA	-	-	0.8		no
4 103 81	T2/20KA	2P	TT, TN	175 V~	CT1	10kA	20kA	-	-			no
4 103 82	T2/20KA	3P	TT, TN	175 V~	CT1	10kA	20kA	-	-			no
4 103 83	T2/20KA	4P	TT, TN	175 V~	CT1	10kA	20kA	-	-			no
4 103 84	T2/20KA	1P+N	TT, TN	175 V~	CT2	10kA	20kA	-	-			no
4 103 85	T2/20KA	3P+N	TT, TN	175 V~	CT2	10kA	20kA	-	-			no
4 103 90	T2/45KA	1P	TT, TN	175 V~	-	20kA	45kA	-	-	1.2		no
4 103 91	T2/45KA	2P	TT, TN	175 V~	CT1	20kA	45kA	-	-			no
4 103 92	T2/45KA	3P	TT, TN	175 V~	CT1	20kA	45kA	-	-			no
4 103 93	T2/45KA	4P	TT, TN	175 V~	CT1	20kA	45kA	-	-			no
4 103 94	T2/45KA	1P+N	TT, TN	175 V~	CT2	20kA	45kA	-	-			no
4 103 95	T2/45KA	3P+N	TT, TN	175 V~	CT2	20kA	45kA	-	-			no
4 122 80	T1+T2/35 kA	1P	TT, TN, IT	440 V~	-	35 kA	50 kA	35 kA	35 kA	2.5 kV	DPX³ 160 80 A	yes
4 122 81	T1+T2/25 kA	1P+N	TT, TNS	350 V~	CT2	25 kA	50 kA	25/50 kA	50 kA	1.5/2.5/1.5 kV		yes
4 122 82	T1+T2/25 kA	3P	TNC	350 V~	CT1	25 kA	50 kA	25 kA	75 kA	1.5 kV		yes
4 122 83	T1+T2/25 kA	3P+N	TT, TNS	350 V~	CT2	25 kA	50 kA	25/100 kA	100 kA	1.5/2.5/1.5 kV		yes
4 143 00	T1+T2/12.5KA	1P	TT,TN	175 V~	-	30kA	60kA	12.5kA	12.5kA	1	gG/gL fuse	no
4 143 01	T1+T2/12.5KA	2P	TT,TN	175 V~	CT1	30kA	60kA	12.5kA	25kA			no
4 143 02	T1+T2/12.5KA	3P	TT,TN	175 V~	CT1	30kA	60kA	12.5kA	37.5kA			no
4 143 03	T1+T2/12.5KA	4P	TT,TN	175 V~	CT1	30kA	60kA	12.5kA	50kA			no
4 143 04	T1+T2/12.5KA	1P+N	TT,TN	175 V~	CT2	30kA	60kA	12.5kA	25kA			no
4 143 05	T1+T2/12.5KA	3P+N	TT,TN	175 V~	CT2	30kA	60kA	12.5kA	50kA			no
4 143 14	T1+T2/12.5KA	1P+N	TT,TN	175 V~	CT2	30kA	60kA	12.5kA	25kA	1.2		yes
4 143 15	T1+T2/12.5KA	3P+N	TT,TN	175 V~	CT2	30kA	60kA	12.5kA	50kA			yes
4 143 24	T2/20kA	1P+N	TT,TN	320 V~	CT2	10kA	20kA	-	-			yes
4 143 25	T2/20kA	3P+N	TT,TN	320 V~	CT2	10kA	20kA	-	-			yes
4 143 44	T2/45kA	1P+N	TT,TN	320 V~	CT2	20kA	45kA	-	-	1.8		yes
4 143 45	T2/45kA	3P+N	TT,TN	320 V~	CT2	20kA	45kA	-	-			yes
4 143 50	T2/20kA	1P	TT,TN	460 V~	-	10kA	20kA	-	-	2		yes
4 143 51	T2/20kA	2P	TT,TN	460 V~	-	10kA	20kA	-	-			yes
4 143 52	T2/20kA	3P	TT,TN	460 V~	CT1	10kA	20kA	-	-	2.5		yes
4 143 53	T2/20kA	4P	TT,TN	460 V~	CT1	10kA	20kA	-	-			yes
4 143 60	T2/45kA	1P	TT,TN	460 V~	-	20kA	45kA	-	-			yes
4 143 61	T2/45kA	2P	TT,TN	460 V~	CT1	20kA	45kA	-	-			yes
4 143 62	T2/45kA	3P	TT,TN	460 V~	CT1	20kA	45kA	-	-			yes
4 143 63	T2/45kA	4P	TT,TN	460 V~	CT1	20kA	45kA	-	-			yes
4 143 74	T1+T2/12.5kA	1P+N	TT,TN	385V±	CT2	30kA	60kA	12.5kA	25kA	1.9		yes
4 143 75	T1+T2/12.5kA	3P+N	TT,TN	385V±	CT2	30kA	60kA	12.5kA	50kA			yes
4 143 84	T2/20KA	1P+N	TT,TN	175 V~	CT2	10kA	20kA	-	-	0.8		yes
4 143 85	T2/20KA	3P+N	TT,TN	175 V~	CT2	10kA	20kA	-	-			yes
4 143 94	T2/45KA	1P+N	TT,TN	175 V~	CT2	20kA	45kA	-	-	1.2		yes
4 143 95	T2/45KA	3P+N	TT,TN	175 V~	CT2	20kA	45kA	-	-			yes

CT1: L(N)-PE protection modes

CT2: L-N and N-PE protection modes

1: DPX³ type circuit breakers (only with SPDs Cat.Nos 4 122 80/81/82/83)

Protected with fuses or other values than those indicated in the chart: please consult us or see product technical data sheet

Low-voltage SPDs

technical characteristics and installation (continued)

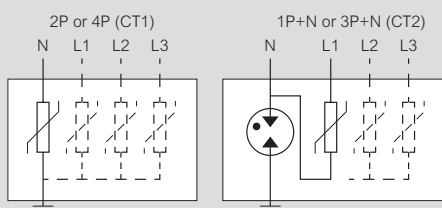
Distribution board SPDs for photovoltaic applications

Degree of protection IP 20

Cat.Nos	Type	Poles	Neutral earthing system	Max. voltage (Uc)	Protection mode	Nominal current In/pole (8/20)	Max. discharge current			Protection Level Up (L-N/L-PE/N-PE)	Protection to be added 1	SD auxiliary (status feedback)
							I _{max} /pole (8/20)	I _{imp} /pole (10/350)	I _{total} (10/350)			
4 103 57	T2/40kA	2P	-	1040 V _~	CT2	18 kA	40 kA	-	-	3.5	gG/gL fuse	no
4 103 58	T2/40kA	2P	-	1500 V _~	CT2	18 kA	40 kA	-	-	5		no

1P+N and 3P+N SPDs

1P+N and 3P+N SPDs, also called 1+1 or 3+1 in accordance with IEC and EN 60364-5-534 standards, or even CT2 configuration, cleverly combine two technologies: a spark gap on the neutral-ground branch and varistors on the Phase-neutral branch.



In this diagram (above right), the varistors, which are responsible for handling transient overvoltages on the phases, are connected between Phase-Neutral, while the neutral-ground branch is protected by a spark gap. As a result, any current leakage from the varistors (ranging from a few μ A, when new, to a few mA, at the end of life) will be discharged to the Neutral, unlike CT1 models, which discharge to Ground. This happens because the spark gap is a fully insulated component, with no leakage current under normal operation.

These SPDs are especially suitable for TT grounding systems, as they do not cause unwanted tripping of upstream earth leakage modules.

Alternatively, Type 1+2 SPDs or Type 2 SPDs with CT2 configuration can be installed upstream of earth leakage protection devices. On the other hand, Type 2+3 SPDs (Cat. Nos 0 039 51/53/71/73) should be installed downstream of these devices.

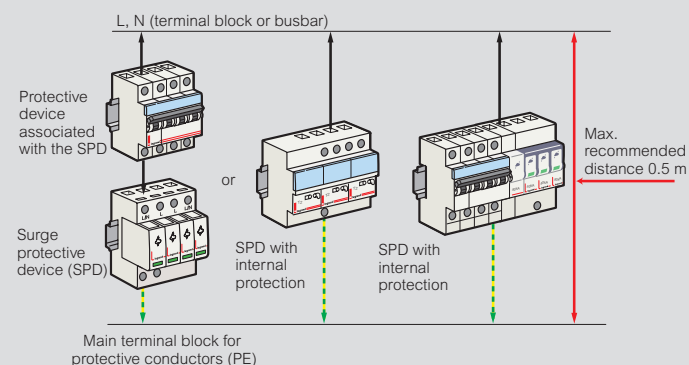
The 1P N-PE model is used when protection between the neutral and ground conductors is required. It features the protection technology designed for this application: the spark gap. Regardless of the grounding system type, this technology ensures electrical isolation of the grounding, providing enhanced safety for individuals.

The installation

1 - SPD protection

SPDs must be protected by a circuit breaker (or fuses), to deal with cases of short-circuited end-of-life which can occur internally. SPDs which have this protection built-in (4 122 10/11/12/13/14/15/16/17 and 0 039 51/53/71/73) simplify installation, and optimise performance of the whole assembly ("50 cm" rule is easier to implement). However, the most common cause of end of life is still overheating of its components, which is dealt with by an internal thermal disconnect, mechanically connected to the status indicator, which is found in all SPDs.

2 - Connection principle



Keep connection lengths short, < 50 cm if possible. EMC (ElectroMagnetic Compatibility) rules: avoid loops, fix the cables firmly against the exposed metal conductive parts.

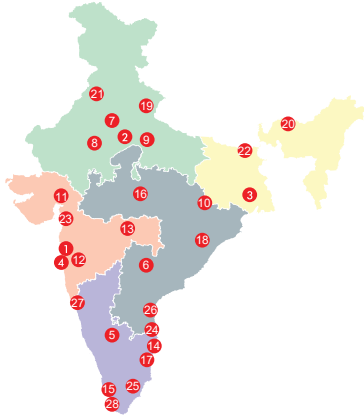
3 - Coordinating upstream/downstream SPDs

Consists of ensuring that any downstream SPD (in distribution enclosures or proximity SPDs) is correctly coordinated in energy terms with any SPD located upstream (TS 61643-12)

Minimum distances between SPDs in meters:

Upstream SPD	Downstream SPD	With LPS ⁽¹⁾	Without LPS ⁽¹⁾
T1+T2/35 and T1+T2/25	T2/40 (Uc 440 V)	0	0
	T2/40 (Uc 320 V)	1	0
T1+T2/12.5	T2/40	5	0
	T2/20 or T2+T3/12	8	0
T2/40	T2/20 or T2+T3/12	-	1
T2/20	T2+T3/12	-	0.5
T2/20 and T2+T3/12	Proximity SPD	-	2

1: Lightning Protection System



Head offices

1. 61 & 62, 6th Floor,
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Off Andheri-Kurla Road, Andheri (E),
MUMBAI – 400 059.
Tel.: (022) 3041 6200
Fax : (022) 3041 6201
Website : www.legrand.co.in

Regional sales offices

2. B-225, 4th Floor, Okhla Industrial Area, Phase -1,
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Fax : (011) 2699 0047
3. Unit no 1203, Ambuja Neotia EcoCentre, Street No. 13, EM Block, Sector V, Bidhannagar, Ambuja Neotia EcoCentre,
KOLKATA – 700 091.
Tel.: (033) 4021 3535
4. C/203, Corporate Avenue, Atul Projects, Near Mirador Hotel, Chakala, Andheri - Ghatkopar Link Road, Andheri - (E), **MUMBAI** – 400 099.
Tel.: (022) 6230 1000
5. Ferozes Manor, Situated at 58 Hospital Road, Shivaji Nagar,
BANGALORE – 560 001.
Tel.: (080) 80682 20000
6. Prestige Phoenix, 1st Floor, Next to Lifestyle Building, Begumpet, **HYDERABAD**,
Telangana - 500 016
Tel.: (040) 4567 1717
7. Unit No. 203, Tower B Bestech Business Towers, Sector-66, Mohali,
CHANDIGARH – 160 017.
Tel.: (0172) 5019 008
8. Building No-128, Mansarovar Link Road, Gopalpura Bypass, Mohan Nagar, Near Ridhi Sidhi Flyover, **JAIPUR** – 302018
Tel.: 0141-2208665
9. 209-A, 2nd Floor, Cyber Heights, Opp. Indira Gandhi Pratishthan, Vibhuti Khand, Gomti Nagar,
LUCKNOW – 226 010.
Tel.: (0522) 431 9316
10. 202 & 203, Sunrise, Forum 100, Burdwan Compound, Lalpur,
RANCHI – 834 001.
Tel.: (651) 660 5400
11. A 101-102, Mondeal Heights, Besides Novotel Hotel, Sarkhej Gandhinagar Highway (S G Highway),
AHMEDABAD – 380 015.
Tel.: (079) 6134 0555
12. 8th Floor, Pinnacle Park Avenue, Opp. Law College, Law College Road Next To German Bakery, Shivaji Nagar, **PUNE** – 411004.
Tel.: (020) 6729 5601 / 600
13. Plot No.95, 2nd Floor, Shreyash Heights, VIP Road, Ramdaspath,
NAGPUR – 440 010.
Tel.: (0712) 2440 900
14. 10 B, Prestige Center Court, Office Block, Vijaya Forum Mall, #183,N.S.K. Salai, Vadapalani, **CHENNAI** – 600 026.
Tel.: (044) 6612 2800
15. J. B. Manjoran Estate, Door No. 50/1107 A9, 3rd Floor, Bye Pass Junction, Edappally,
COCHIN – 682 024.
Tel.: (0484) 6604 700
16. 204-205, Megapolis Square, 579, M G Road,
INDORE – 452 001.
Tel.: (0731) 4999 891
17. MF-2, Datta's Lords House, Jammi Chettu Street, Mogalrajapuram,
VIJAYAWADA – 520 010.
Tel.: (0866) 248 2393/6393
18. Plot No. 359, Saheed Nagar, 2nd Floor,
BHUBANESWAR – 751 007.
Tel.: (0674) 254 0623
19. Unit - 1 & 2, Vijay Park, Main Chakrata Road,
DEHRADUN- 248 001.
Uttarakhand.
Tel.: (0135) 661 6100
20. House No. 97, Ground Floor, Rajgarh Main Road, Opp. City Heart Nursing Home,
GUWAHATI – 781 007.

Area offices

21. SCO 50-51, 2nd Floor Lodhi Club Road Shaheed Bhagat Singh Nagar, **LUDHIANA** – 141 013.
Tel.: (0161) 277 0301
22. 94, Udham Singh Sarani, Ground Floor, Ashrampara,
SILIGURI – 734 001.
Tel.: (353) 264 1067
23. A-207, Universal Business Center, Near Madhuvan Circle, L.P. Savani Road, Adajan,
SURAT – 395 009.
Tel.: (0261) 263 3861
24. Aparna Towers, 1st Floor, 2/3, Bypass Road,
MADURAI – 625 010.
Telefax : (0452) 230 8414
25. 43-9-205, 3rd Floor, Plot No. 10, Subbalakshmi Nagar, Opp. More Super Market,
VISAKHAPATNAM – 530 016.
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26. B-5, 1st Floor, Thirumalai Towers, 723, Avanashi Road,
COIMBATORE – 641 018.
Tel.: (0422) 668 3200
27. 515 & 516, Gera Imperium Grand, Patto centre , Panaji **GOA** – 403 001
28. 1st Floor, Cordial Bharathi, Nanthancodu, **Thiruvanthapuram**, KERALA- 695 003

Technical assistance from Legrand

Telephonic technical assistance for selection of products, technical information, guidance, wiring diagrams and estimation is now made available to you at each Regional Office. Contact the Technical Officer of Legrand at the following telephone numbers

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Kolkata : Tel.: (033) 4021 3535
Mumbai : Tel.: (022) 6230 1000
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For other places, contact the nearest Regional / Branch / Area offices

customer.care@legrand.co.in

