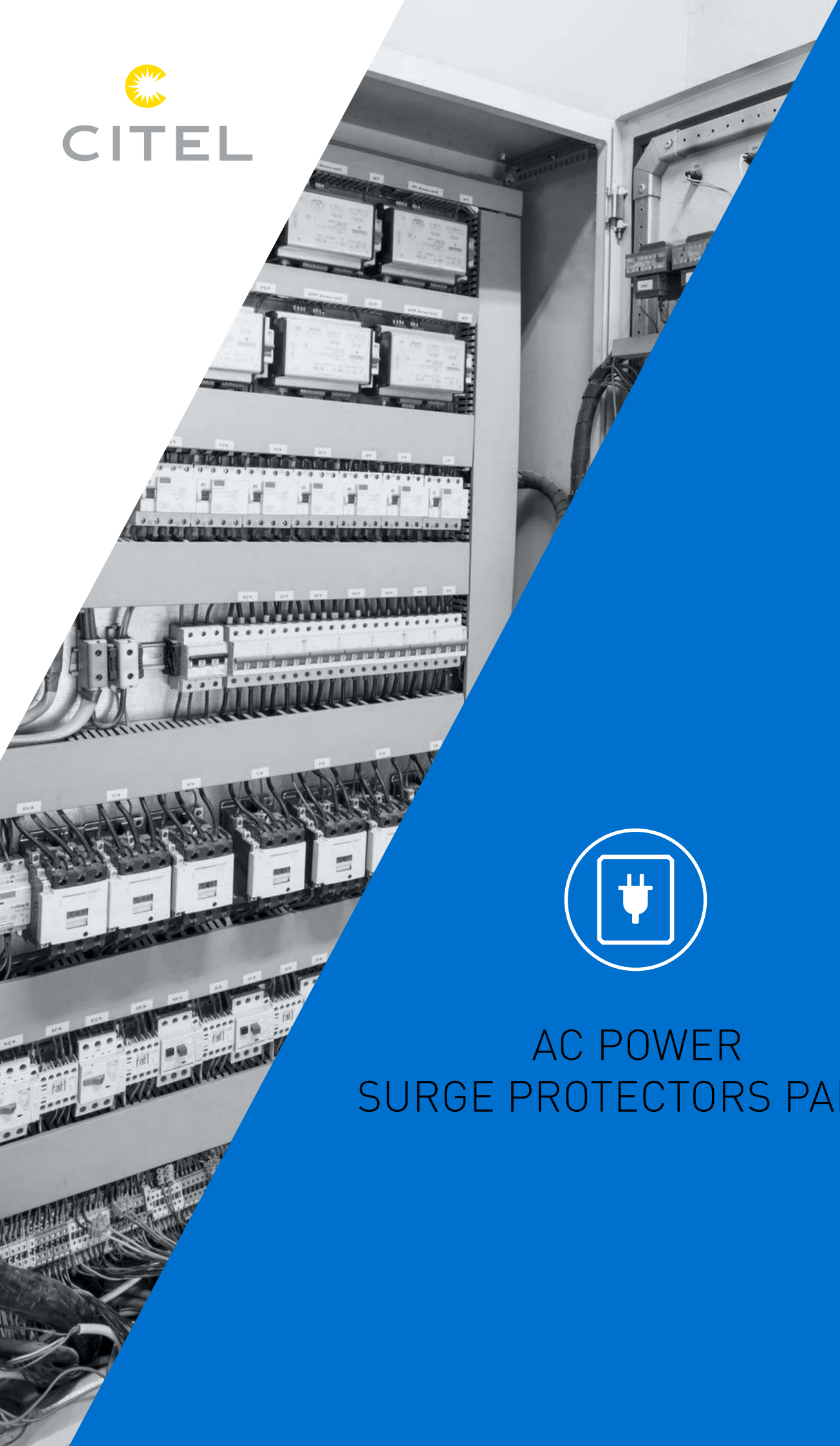
CITEL



AC POWER
SURGE PROTECTORS PANEL

AC SURGE PROTECTORS HARD-WIRED UNITS AND COMBINER BOXES

CITEL offers a line of surge protectors for the single and three phase AC networks connected to sensitive equipment.
These products, are available in various formats

- Hard-wired units single-phase (MSB, MLP)
- Hard-wired units and combiner box for US market (M series)

Series		Description	Characteristics	Page
MSB		Hard-wired SPD Type 2 or 3	compact	91 93
M50		Hard-wired SPD US market	Single-phase or 3-phase	95
MS MDS MP		SPD combiner boxes US market	Compliance UL1449 5th ed. 80 to 200 kA	94 97 99

HARD-WIRED SURGE PROTECTORS

MSB series

SPDs Type 2 or 3 for effective protection of sensitive equipment, in addition to the surge protector installation (coordination surge protector). Recommended installation near a sensitive equipment away from the surge protector (> 10 m). These surge protectors utilize a compact and economical varistor-based-scheme, to obtain a power flow relevant for secondary protection. They are more in accordance with IEC 61643-11, equipped with internal security which will disconnect the product of their networks for end of life. The operating condition of the arrester is signaled by light (or buzzer for version MSB6). Available in screw terminal connectors or pre-wired cabling.

MLPC/MLPM series

Complete ranges of compact surge protectors specifically designed for the protection of outdoor lighting equipment with LED technology (see page 103).

STAND ALONE SPD ENCLOSURES

M series

M series surge protection devices (M50, MS and MDS) in metal enclosures belong to a complete family of surge protection devices specifically designed to meet the requirements of the North American surge protection standards: USA and Canada. Respectively, the UL1449 5th ed. standard and the C22.2 No.269.1–22.2 No.269.5 standards. These standards define different categories of surge protection devices (SPD) and unfortunately use very close or identical terms compared to the SPD classification used in International standards. It is therefore crucial not to confuse these terms and understand their meaning based on the reference standards.



UL STANDARDS

The north American standard applicable to AC power SPD (UL1449 5thedition) proposes a different approach and classification from the international standard (IEC61643-11)

Type 1 - Permanently connected surge protection devices to be installed both, on the supply side and the load side of the equipment main overcurrent protective device. The surge protection devices are supposed to be self-protected against short circuits and do not require external protection.

Type 2 - Permanently connected surge protection devices to be installed on the load side of the equipment main overcurrent protective device. This surge protection device requires an external short circuit protection device.

Type 3 - Surge protection devices installed at a conductor length of 10 meters or greater from the electrical panel. For example, the mobile surge protectors (that can be plugged into the outlet such as a multiple power outlet etc.). They can also be directly installed on the equipment to be protected.

Type 4 « Component Assemblies » - Component Assemblies consisting of one or more Type 5 components and a disconnect complying with the limited end-of-life short circuit current tests (0.5A, 2.5A, 5A and 10A).
Type 1, 2, 3 « Component Assemblies » - Type 4 Component Assemblies having, in addition to the limited end-of-life short circuit current tests, passed all the other end-of-life tests (under the short circuit current of 100A, 500A, 1000A and SCCR) and also with (2CA) or without (1CA) external short circuit protection

Type 5 - Discrete component surge suppressors, such as MOVs, Diode or GDT that may be mounted on a PCB, connected by its leads or provided within an enclosure with mounting means and wiring terminations.
It is therefore clear from these definitions that Type 1 and Type 2

surge protection devices (according to the US-accepted terminology) are not necessarily linked to potential surge hazard as it is in the International approach (IEC). In UL standard, Type 1 and Type 2 surge protection devices are determined by the fact whether or not they need a short circuit protection. However, depending on the impulse tests, the minimum levels required for a Type 1, Type 2 and Type 3 surge protection devices are as follows :
Type 1 – 10kA or 20kA 8/20
Type 2 – 3kA, 5kA, 10kA or 20kA 8/20
Type 3 – 6kV/3kA 1,2/50-8/20

It is also understood that the location of the surge protection device imposed by its type is related to a certain stress level naturally being such that: the closer the surge protection device is to the mains connection point the greater its ability to withstand the surge.
Note that the maximum nominal discharge current is set at 20 kA (equivalent to International nominal discharge current (In) but it has no limitation and much lower in energy than the maximum impulse current (Iimp) of International Type 1).

Also important to remember that even if it is very tempting to compare the American voltage protection rating (VPR) and the International voltage protection level (Up), they are not (yet) comparable. The VPR is determined for any type of American SPD by using by a 6 kV/3 kA combination waveform generator.

The concept of "Listed" or "Recognized"

is important to understand particularly regarding the installation according to the American installation rules. A listed product is a device that any electrician can install on an installation (on site) without compromising safety. A recognized device cannot be installed on an installation. It can only be installed on a piece of equipment or a system (e.g. electrical cabinet) by professionals, at the factory, following certain rules and may be a subject to additional tests.

Imax parameter

Another disconcerting and confusing aspect is the maximum discharge current (Imax) values indicated for American surge protection devices:
- For an International surge protection device, the Imax value is defined by standards and must be tested if declared.
- For an American surge protection device, Imax has no official definition and is completely open to various interpretations by users and manufacturers.

The easiest interpretation is that the Imax does not represent a maximum single shock that the surge protection device can withstand but reflects its durability. This Imax is the algebraic sum of the individual Imax values of possible multiple varistors connected in parallel for each declared protection mode.
For example, if the protection mode (common in the USA) phase with the neutral and the ground connected (usually called "per phase") consists of 5 varistors between the line and the neutral and 5 varistors between the line and the earth (each varistor having an individual Imax value of 40kA), the final declared Imax value will be 5x40+5x40=400kA...
This type of value totally escapes from the International logic but is useful information for American users as it gives an idea of the surge protection device capacity in terms of its service life.
Other example, a surge protection device with a In of 20kA and declared Imax of 40kA will not be able to withstand much more than 20 shocks of 20kA. On the other hand, a surge protection device having the same In of 20kA and declared Imax of 400kA will be able to withstand more than 2000 shocks of 20kA!
Conversely, the International Type 1 design with its characteristic of 10/350 wave maximum impulse current (Iimp) is completely unknown (and not accepted) in the USA.

5th Edition	**Line Side of Main Disconnect**	**Load Side of Main Disconnect**	**Local Equipment**	**Surge component + Thermal Disconnect (component assembly)**	**Surge Component Only**
	No upstream fuse requested	*Upstream fuse requested*	*Upstream fuse requested + distant 30ft from main panel*	*To be used in equipment/ panel. UL additional tests expected*	*To be used in equipment UL additonal test expected*
Listed	Type 1	Type 2	Type 3	-	-
Listed + condition (enclosure) (a)	Open- Type 1	Open- Type 2	Open- Type 3	-	-
Recognized (b)	Type 1CA	Type 2CA	Type 3CA	Type 4CA	Type 5
Required Tests	- SCCR - Intermediate - Limited (10, 5, 2.5 , 0.5 A) - VPR at 6kV/3kA - Nominal Discharge Current (15 x In: 10, 20 kA) - -	- SCCR - Intermediate - Limited (10, 5, 2.5 , 0.5 A) - VPR at 6kV/3kA - Nominal Discharge Current (15 x In: 3, 5, 10, 20 kA) - -	- - - Limited (10, 5, 2.5 , 0.5 A) - VPR at 6kV/3kA - - Operating Duty Cycle (15 x UOC: 6, 10, 20 kV) -	- - Limited (10, 5, 2.5 , 0.5 A) - - Nominal Discharge Current (15 x In: 0.01 to 20 kA) - - MLV at In	- - - - Nominal Discharge Current (15 x In: 0.01 to 20 kA) - - MLV at In
Optional Tests	-Field wiring (Not for CA)	-Field wiring (Not for CA)	-Field wiring (Not for CA) - Nominal Discharge Current (In x 15) -SCCR, Intermediate if permanently connected	- VPR at 6kV/3kA	

(a) field wiring. Can be installed by any electricien on site
(b) factory wiring/use. Cannot be installed on field. Must be installed in certified factory in products or cabinet.
Note 1: For component assembly (1CA and 2CA), Type 1 and Type 2 applications are considered in regards to nominal discharge current test. If Type3 application this is replaced by Operating Duty test.
Note 2: For reading simplification, thermal tests are not shown in this table but have to be considered.



MSB10-400(UL)

MSB10 SERIES

- Compact Type 2+3 surge protectors
- Wall mounting and hard wired connection
- UL1449 5ed. and IP66 (MSB10-400)
- Status indicators
- EN 61643-11, IEC 61643-11 and UL1449 5th. compliance

Characteristics

CITEL Model		MSB10-400(UL)	MSB10-480(UL)	MSB10-120(UL)	MSB10-400	MSB10V-400	MSB10V-120	MSB10C-400
Description		Compact Type 2+3 hard wired SPD						
Network		230 V single phase	347-480 Vac single phase	120 V single phase	230 V single phase	230 V single phase	120 V single phase	230 V single phase
AC system		TT-TN	TT/TN	TT/TN	TT-TN	TT-TN	TT/TN	TT-TN
Protection mode(s)		CM/DM	CM/DM	CM/DM	CM/DM	CM/DM	CM/DM	CM/DM
Max. AC operating voltage	Uc	300 Vac	550 Vac	150 Vac	255 Vac	255 Vac	150Vac	255 Vac
Max. Load current	IL	-	-	-	-	16 A	16 A	16 A
Residual current *Leakage current at Uc*	Ic	< 1 mA	< 1 mA	None	None	None	None	None
Temporary Over Voltage (TOV) *Charasteristics - 5 sec.*	UT	335 Vac withstand	700 Vac withstand	180 Vac withstand	335 Vac withstand	335 Vac withstand	180 Vac withstand	335 Vac withstand
Temporary Over Voltage (TOV) *Charasteristics - 120 mn*	UT	440 Vac disconnection	915 Vac disconnection	230 Vac disconnection	440 Vac disconnection	440 Vac disconnection	230 Vac disconnection	440 Vac disconnection
Nominal discharge current	In	3 kA	3 kA	3 kA	3 kA	3 kA	3 kA	3 kA
Max. discharge current *max. withstand @ 8/20 µs by pole*	Imax	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
Withstand on Combination waveform *Class III test*	Uoc	6 kV	6 kV	6 kV	6 kV	6 kV	6 kV	6 kV
Withstand on overvoltages *IEEE C62.41.1*		10 kV/10 kA	10 kV/10 kA	10 kV/10 kA	10 kV/10 kA	10 kV/10 kA	10 kV/10 kA	10 kV/10 kA
Protection level CM/DM *@In (8/20µs) and @ 6kV (1.2/50µs)*	Up	1.2 kV/1.2 kV	2 kV/2 kV	1 kV/1 kV	1.5 kV/1.5 kV	1.5 kV/1.5 kV	1 kV/1 kV	1.5 kV/1.5 kV
Admissible short-circuit current	Isccr	10 000 A	10 000 A	10 000 A	10 000 A	10 000 A	10 000 A	10 000 A
Associated disconnectors								
Thermal disconnector		internal						
Installation ground fault breaker		Type «S» or delayed						
Mechnical characteristics								
Dimensions		see diagram						
Connection to Network		wires	wires	wires	wires	screw terminal	screw terminal	screw terminal
Voltage/operating indicator		Green led ON						
Failsafe behavior		Disconnection	Disconnection	Disconnection	Disconnection	Disconnection and AC line cut-off	Disconnection and AC line cut-off	Disconnection and AC line cut-off
Disconnection indicator		Green led OFF						
Mounting		Wall or plate						
Operating temperature		-40/+85°C						
Protection rating		IP66	IP66	IP65	IP65	IP20	IP20	IP20
Housing material		Thermoplastic UL94 V-0						
Standards								
Compliance		IEC 61643-11 / EN 61643-11 / UL1449 ed.5						
Certification		UL / TUV	UL	UL	-	-	-	-
Part number								
		561501	561801	561601	561201	561101	561602	561301



MSB10C

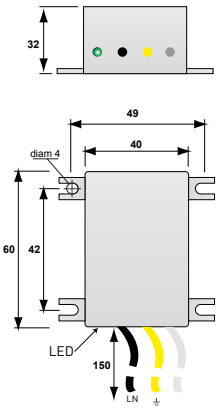


MSB10V

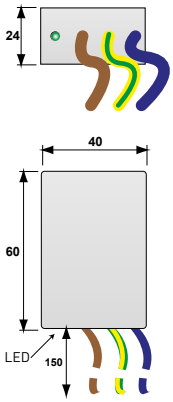


MSB10

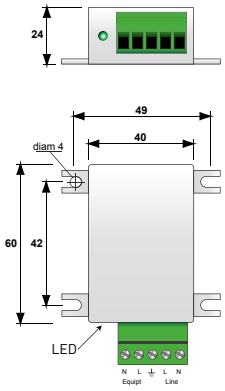
MSB10-UL



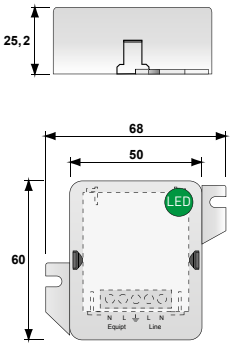
MSB10



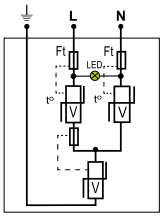
MSB10V



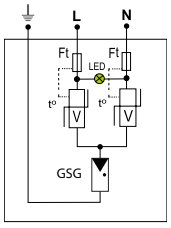
MSB10C



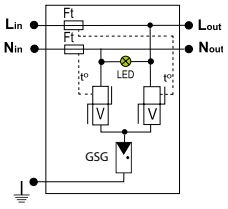
MSB10-xx(UL)



MSB10



MSB10V/MSB10C



V: Varistor
Ft: Thermal fuse
T°: Thermal system disconnection
GSG: Specific Gas Tube
LED: Disconnection indicator



MSB6-400

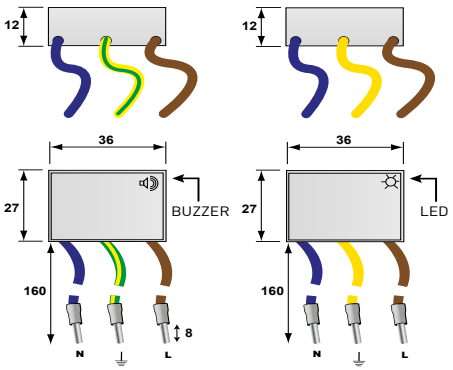
MSB6-24LD

MSB6 SERIES

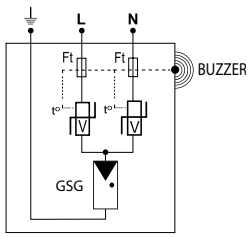
- **Ultra Compact Type 3 surge protectors for 230 Vac networks**
- **Mounting on plate or terminal**
- **Disconnection signaling by buzzer or Led system**
- **24 V AC or DC version available**
- **EN 61643-11, IEC 61643-11 and UL1449 5ed. compliance**

MSB6-400

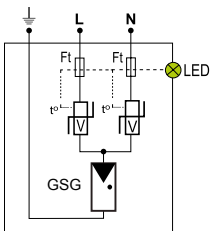
MSB6-400/LD
MSB6-24/LD



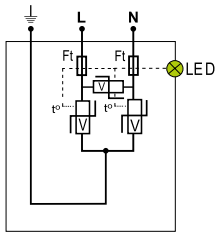
MSB6-400



MSB6-400/LD



MSB6-24/LD



V: Varistor
Ft: Thermal fuse
LED: Disconnection indicator
T°: Thermal system disconnection
GSG: Specific Gas Tube
Buzzer : Sound disconnection indicator

Characteristics

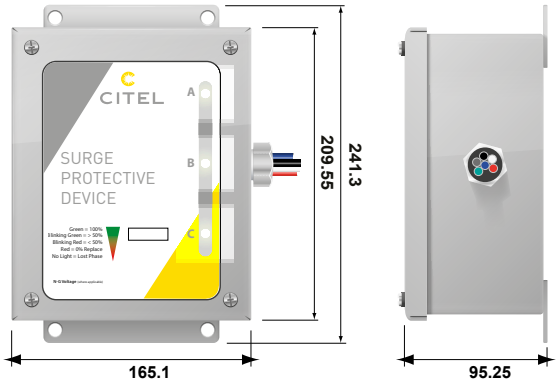
CITEL Model		MSB6-400	MSB6-24/LD	MSB6-400/LD
Description		Compact Type 3 hard wired SPD	Ultra Compact Type 3 hard wired SPD	Ultra Compact Type 3 hard wired SPD
Network		230 V single phase	24 Vac-30Vdc	230 V single phase
AC system		TT-TN	-	TT-TN
Protection mode(s)		CM/DM	CM/DM	CM/DM
Max. AC operating voltage	Uc	255 Vac	30 Vac-38 Vdc	255 Vac
Residual current *Leakage current at Uc*	Ic	None	None	None
Temporary Over Voltage (TOV) Characteristics - 5 sec.	UT	335 Vac withstand	36 Vac withstand	335 Vac withstand
Temporary Over Voltage (TOV) Characteristics - 120 mn	UT	440 Vac disconnection	42 Vac disconnection	440 Vac disconnection
Nominal discharge current *15 x 8/20 µs impulses*	In	3 kA	0.5 kA	3 kA
Max. discharge current *max. withstand (à 8/20 µs by pole*	Imax	6 kA	2 kA	6 kA
Withstand on Combination waveform *- Class III test*	Uoc	6 kV	1 kV	6 kV
Withstand on overvoltages *IEEE C62.41.1*		6 kV/6 kA	-	6 kV/6 kA
Protection level CM/DM *(In (8/20µs) and (à 6kV (1.2/50µs)*	Up	1.5 kV/1.5 kV	0.18 kV/0.18 KV	1.5 kV/1.5 kV
Admissible short-circuit current	Isccr	3 000 A	3 000 A	3 000 A
Associated disconnectors				
Thermal disconnector		internal		
Installation ground fault breaker		Type «S» or delayed		
Mechanical characteristics				
Dimensions		see diagram		
Connection to Network		wires		
Voltage/operating indicator		without	Green Led ON	Green Led ON
Failsafe behavior		Disconnection		
Disconnection indicator		buzzer ON	Led OFF	Led OFF
Mounting		AC outlet or screw terminal	AC outlet or screw terminal	AC outlet or screw terminal
Operating temperature		-40/+85°C		
Protection rating		IP20		
Housing material		Thermoplastic UL94 V-0		
Standards				
Compliance		IEC 61643-11 / EN 61643-11 / UL1449 ed.5		
Part number				
		561302	561313	561312

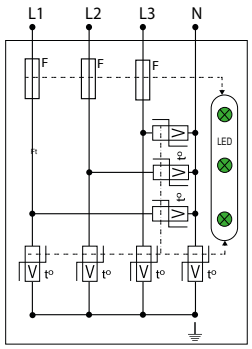
CITEL



SERIES MS

- Imax from 105 to 220 kA (8/20µs)
- All mode of protection
- 200 kA short-circuit fault current rated
- Multi-redundant protection circuit per phase
- Full on-board diagnostics - LED indicators, remote and audible alarms
- EMI/RFI noise filtering (option)
- NEMA 4/4X/12 enclosure
- UL 1449 5th Ed. Type 1 listed
- Lightning counter (option)





V: High energy varistor
t° : Thermal disconnector
F : Fuse
LED : Failure indicator

Characteristics

Series	MS80	MS100	MS160	MS200
Max. discharge current by phase Imax	88 kA	132 kA	176 kA	220 kA
Type of Network				
120/240 Vac Split Phase 3Ph+PE	MS80-120T	MS100-120T	MS160-120T	MS200-120T
120/208 Vac Wye 3Ph/N+PE	MS80-120Y	MS100-120Y	MS160-120Y	MS200-120Y
277/480 Vac Wye 3Ph/N+PE	MS80-277Y	MS100-277Y	MS160-277Y	MS200-277Y
240/415 Vac Wye 3Ph/N+PE	MS80-240Y	MS100-240Y	MS160-240Y	M2S00-240Y
120/120/240 Vac Hi-Leg Delta 3Ph/N PE	MS80-240DCT	MS100-240DCT	MS160-240DCT	MS200-240DCT
240 Vac Delta 3Ph+PE	MS80-240D	MS100-240D	MS160-240D	MS200-240D
347/600 Vac Wye 3Ph/N+PE	MS80-347Y	MS100-347Y	MS160-347Y	MS200-347Y
480 Vac Delta 3Ph+PE	MS80-480D	MS100-480D	MS160-480D	MS200-480D
Protection modes	L/N - L/PE - N/PE - L/L			
Admissible short-circuit current	200 kA			
RFI filtering	- 40 dB			
Standards compliance	UL1449 5th edition - IEC 61643-1			
Safety				
Thermal disconnector	internal to each component			
Electrical disconnector	internal to each surge protector			
Failure indicators	by Led			
Failure indicators	audible alarm and remote signaling			
Mechanical characteristics				
Housing material	Metal-NEMA 4, NEMA 12, Stainless steel-NEMA 4X			
Operating temperature	-40/+85 °C			
Mounting	Wall mounting by screws (not supplied)			
Connection to AC network	#10 AWG 36'' Leads			
Dimensions (H x L x D)	203 x 152 x 101 mm (8''x 6''x 4'')			
Specific features				
Disconnection switch	no			

Version	Network	Voltage max. (Uc)	Residual voltage (V) following UL1449@500A			
			L-N	L-PE	N-PE	L-L
MSxxx-120T	120/240 Vac Split Phase 3Ph+PE	150Vac	700	700	700	1000
MSxxx-120Y	120/208 Vac Wye 3Ph/N+PE	150Vac	700	700	700	1000
MSxxx-277Y	277/480 Vac Wye 3Ph/N+PE	320Vac	1000	1200	1000	1800
MSxxx-240Y	240/415 Vac Wye 3Ph/N+PE	320Vac	1000	1200	1000	1800
MSxxx-240DCT	120/120/240 Vac Hi-Leg Delta 3Ph/N PE	150/320Vac	1000	1200	1000	1800
MSxxx-240D	240 Vac Delta 3Ph+PE	320Vac	-	1200	-	1800
MSxxx-347Y	347/600 Vac Wye 3Ph/N+PE	550Vac	1800	1800	1800	3000
MSxxx-480D	480 Vac Delta 3Ph+PE	500Vac	-	1800	-	3000

M50 SERIES



M50-120Y-A

- For AC Single Phase and 3-phase network (wye, delta, split phase)
- In: 20 kA
- Imax: 50 kA
- No leakage current
- Visual indicator and audible alarm
- Formats: side or back nipple
- UL 1449 5th Ed. certification

Characteristics

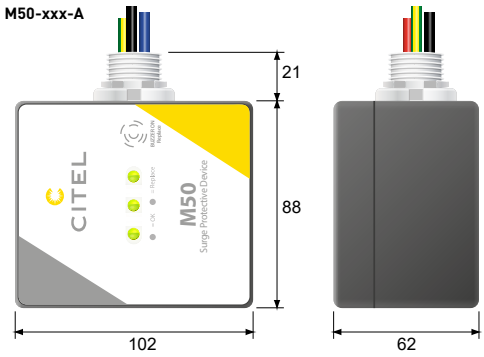
Model		M50-120Y-*	M50-120T-*	M50-120S-*	M50-230S-*	M50-240T-*	M50-240D-*	M50-277Y-*	M50-347Y-*	M50-480D-*	M50-600D-*
System voltage		120-208 V	120-240 V	120 V	230 V	240-480V	240 V	277-480 V	347-600 V	480 V	600 V
AC System		4W+G Wye	3W+G Split Phase	2W+G Single Phase	2W+G Single Phase	3W+G Split Phase	3W+G Delta	4W+G Wye	4W+G Wye	3W+G Delta	3W+G Delta
Frequency		50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Residual current *-Leakage current at MCOV*	Ipe	None	None	None	None	None	None	None	None	None	None
Maximum Operating Voltage L- PE	MCOV	140 V	140 V	140 V	270 V	280 V	280 V	320 V	400 V	550 V	690 V
Maximum Operating Voltage L- N	MCOV	140 V	140 V	140 V	270 V	280 V	-	320 V	400 V	-	-
Maximum Operating Voltage N-PE	MCOV	120 V	120 V	120 V	230 V	240 V	-	280 V	350 V	-	-
Maximum Operating Voltage L-L	MCOV	240 V	280 V	-	-	480 V	280 V	560 V	560 V	560 V	690 V
Short Circuit Current Rating	SCCR	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA
Follow current	If	None	None	None	None	None	None	None	None	None	None
Nominal discharge current *15 x 8/20 µs impulses*	In	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Max. discharge current L-N *max. withstand @ 8/20 µs*	Imax	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA
Max. discharge current N-PE *max. withstand @ 8/20 µs*	Imax	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA
Total lightning current *max. total withstand @ 8/20 µs*	Itotal (8/20)	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA
Total lightning current *max. total withstand @ 10/350 µs*	Itotal (10/350)	15 kA	12 kA	8 kA	8 kA	12 kA	12 kA	15 kA	15 kA	12 kA	12 kA
Voltage Protection Rating L-PE	VPR	1400 V	1400 V	1400 V	1300 V	1300 V	1400 V	1300 V	2000 V	1300 V	2000 V
Voltage Protection Rating L-N	VPR	600 V	600 V	600 V	1200 V	1200 V	-	1200 V	2000 V	-	-
Voltage Protection Rating N-PE	VPR	1300 V	1300 V	1300 V	1300 V	1300 V	-	1300 V	1800 V	-	-
Voltage Protection Rating L-L	VPR	1100 V	1100 V	-	-	2100 V	1100 V	2100 V	3000 V	2100 V	2600 V
Associated disconnectors											
Maximum recommanded fuse		200 A, Class J									
Thermal disconnector		internal									
Mechnical characteristics											
Dimensions		see diagram									
Visual disconnection indicator		LED off									
Sound disconnection indicator		Continuous Buzzer									
Connection to Network		#12 AWG wires - 24 '' length									
Operating Temperature		-40/+85 C°									
Housing material		Aluminum cast									
Mounting type		Side or back nipple (Version A or B) T hreaded (M22) - NTP 1/2 adaptor available									
Environmental rating		IP66 / NEMA 6									
Location Installation		Indoor / outdoor									
Standards											
Compliance		IEC 61643-11									
Certification**		UL1449 5th Ed. - File E326289									
Part Number											
for A version (side nipple)		751101	751102	751103	751303	751402	751404	751501	751601	751704	751804
for B version (back niplle)		751111	751112	751113	751313	751412	751414	751511	751611	751714	751814

* = A or B
** M50-347Y = UL pending

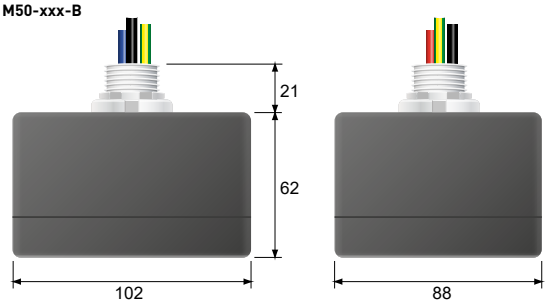
M50x-120Y-B-YY

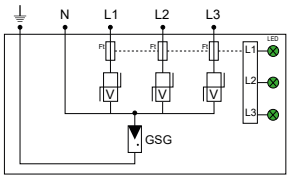
- yy-RA : Remote contacts
- Output type:
  A: side nipple
  B: back nipple
- AC network type
- AC voltage network
- F : RFI filter

M50-xxx-A



M50-xxx-B





LED : Disconnection indicator
Ft : Thermal fuse
GSG : Specific gas tube
V: High energy varistor



SERIES MDS

- **Type 1 surge protection panels**
- **Real time diagnostics**
- **Optional integrated disconnect**
- **Itotal : 300kA , 600 kA, 750 kA**
- **UL1449 5th Ed.**

Characteristics

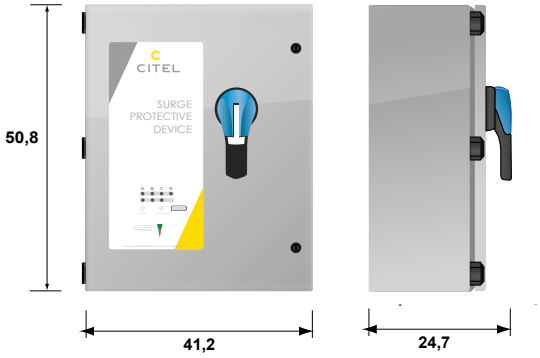
CITEL model		MDS300*				MDS600*				MDS750*			
Suffix		-120T -120Y	-240Y -240D	-277Y -347Y	-480D -600D	-120T -120Y	-240Y -240D	-277Y -347Y	-480D	-120T -120Y	-240Y -240D	-277Y -347Y	-480D -600D
Network		120/240 V 120/208 V	240/415 V 240 V	277/480 V 347/600 V	480 V 600 V	120/240 V 120/208 V	240/415 V 240 V	277/480 V 347/600 V	480 V 600 V	120/240 V 120/208 V	240/415 V 240 V	277/480 V 347/600 V	480 V 600 V
Max. operating voltage L-PE	MCOV	150-210 V	300-420 V	420-460 V	550 V	150-210 V	300-420 V	420-460 V	550 V	150-210 V	300-420 V	420-460 V	550 V
Temporary Over Voltage (TOV) Charasteristics	Ut	175 Vac	335 Vac	420 Vac	840 Vac	175 Vac	335 Vac	420 Vac	840 Vac	175 Vac	335 Vac	420 Vac	840 Vac
Nominal discharge current *15 impulses 8/20µs*	In	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Total lightning current *8/20µs*	Itotal	300 kA	300 kA	300 kA	300 kA	600 kA	600 kA	600 kA	600 kA	750 kA	750 kA	750 kA	750 kA
Max. lightning current *1 impulse 10/350µs*	Iimp	22 kA	22 kA	22 kA	22 kA	44 kA	44 kA	44 kA	44 kA	55 kA	55 kA	55 kA	55 kA
Follow current	If	none	none	none	none	none	none	none	none	none	none	none	none
Protection level* *at 3 kA + connection*	VPR	900	1200	1800	2000	900	1200	1800	2000	900	1200	1800	2000
Protection level * at In	Up	900	1200	1800	2000	900	1200	1800	2000	900	1200	1800	2000
Short-circuit current	SCCR	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA	200 kA
Associated disconnectors													
Max. recommended fuse		200 A - Classe J											
Thermal disconnector		Included											
Mechanical characteristics													
Dimensions		See diagram											
Connection		screw terminals, mini 4.5 mm²											
Remote signal indicator		250 Vac max, 2A											
Mounting		Wallmount by screws (not supplied)											
Operating temperature		-50°C/+85°C											
Protection class		NEMA 4 / IP56 / Outdoor											
Housing material		Metal, Stainless steel option											
Standards compliance		NF EN 61643-11 / UL1449 ed.5											
Part number													
		consult us											

* : depends on versions and modes

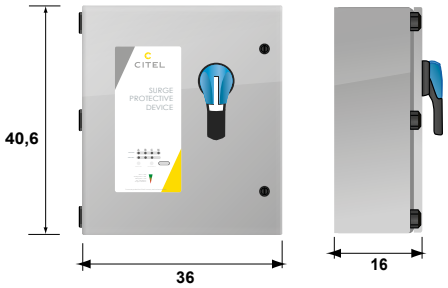
MDSXXX X-xxx x

- Configuration (T,Y,D)
- Voltage
- « » = Basic (Diagnostic by phase, audible alarm, remote alarm)
- «**S**» = Standard (Internal fuse, Diagnostic by phase, audible alarm, remote alarm)
- «**E**» = Enhanced (Internal fuse, external disconnect switch, Diagnostic by phase, audible alarm, remote alarm, surge counter)
- Imax

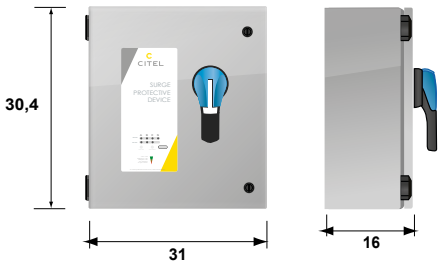
MDS750E series



MDS600E series



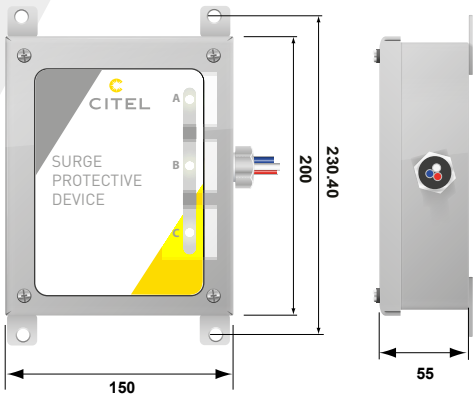
MDS300E series

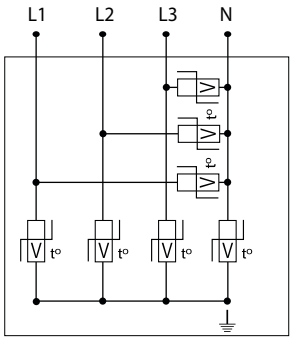




SERIES MP

- Imax from 105 to 220 kA (8/20µs)
- All mode of protection
- 150 kA short-circuit fault current rated
- Multi-redundant protection circuit per phase
- LED indicators
- NEMA 4x enclosure
- UL 1449 5th Ed. Type 1 listed





V: High energy varistor
t° : Thermal disconnector

Characteristics

Series		MP80	MP100	MS200
Max. discharge current by phase	Imax	88 kA	132 kA	220 kA
Type of Network				
120/240 Vac Split Phase 3W+PE		MP80-120T	MP100-120T	MP200-120T
120/208 Vac Wye 3Ph/N+PE		MP80-120Y	MP100-120Y	MP200-120Y
277/480 Vac Wye 3Ph/N+PE		MP80-277Y	MP100-277Y	MP200-277Y
240/415 Vac Wye 3Ph/N+PE		MP80-240Y	MP100-240Y	MPS00-240Y
120/120/240 Vac Hi-Leg Delta 3Ph/N PE		MP80-240DCT	MP100-240DCT	MP200-240DCT
240 Vac Delta 3Ph+PE		MP80-240D	MP100-240D	MP200-240D
347/600 Vac Wye 3Ph/N+PE		MP80-347Y	MP100-347Y	MP200-347Y
480 Vac Delta 3Ph+PE		MP80-480D	MP100-480D	MP200-480D
Protection modes		L/N - L/PE - L/L		
Nominal discharge current	In	20 kA		
Admissible short-circuit current		150 kA		
Standards compliance		UL1449 5th edition - IEC 61643-1		
Safety				
Thermal disconnector		internal to each component		
Electrical disconnector		internal to each surge protector		
Failure indicators		LED status		
Mechanical characteristics				
Housing material		NEMA 4, Polycarbonate		
Enclosure		UL-94V0		
Operating temperature		-40/+85 °C		
Mounting		Wall mounting by screws (not supplied)		
Connection to AC network		#10 AWG 36'' Leads		
Dimensions (H x L x D)		230,4 x 150 x 55 mm		

	MCOV	VPR			
	L-G	L-L	L-G	L-N	N-G
MPxxx-120T	150Vac	1000	700	700	700
MPxxx-120Y	150Vac	1000	700	700	700
MPxxx-277Y	320Vac	1800	1200	1000	1000
MPxxx-240Y	320Vac	1800	100	1200	1000
MPxxx-240DCT	150/320Vac	1000	700	700	1000
MPxxx-240D	640Vac	1800	1200	-	-
MPxxx-347Y	550Vac	3000	1800	1800	1800
MPxxx-480D	550Vac	3000	1800	-	-