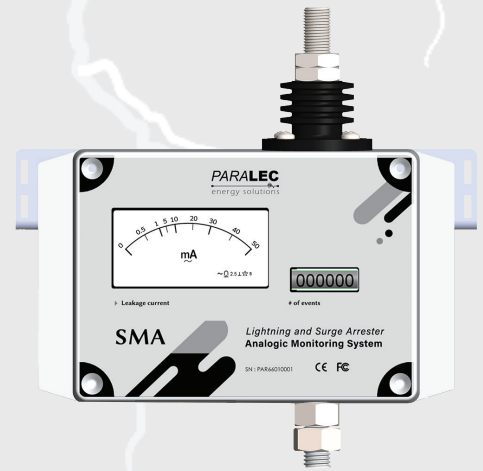
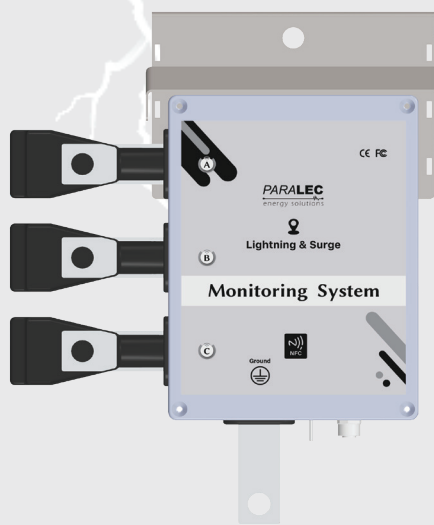
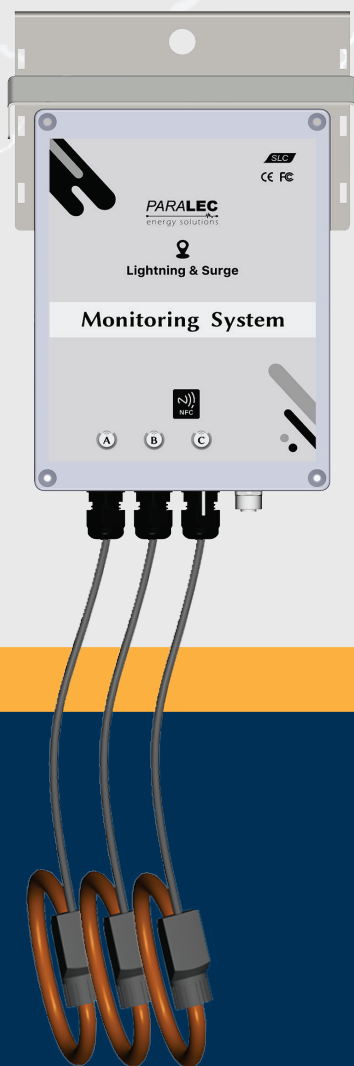


Surge & Lightning Monitoring Devices

For lightning protection equipment



Monitoring of surge arresters, MOA, LLPD, EGLA, TLA, CLAH, lightning rods transmission lines, building

- Wired or wireless communication : RS485 modbus, LoRA, NFC digital or analogic output

- Outdoor device : IP65

- Solar supply & external supply versions

- Unique condition monitoring :

- total discharged energy monitoring system , lightning , surge events and discharges record, lightning waveform

- Durable device:

- stainless steel, polycarbonate UV resistant, aluminum.

- Up to 3 phases gapped arresters on the same device.

- Monitoring software

- GPS localisation and timestamp



See lightning & surges, clearly

Paralec has dedicated its research activities to lightning and surges qualification and protection. The surge and lightning range of products helps our customers understanding the origin of surges, their parameters and giving a view on a the impact of protection equipment as well as forecasting their lifespan.

Flexible

- Measurement system that is 100% customizable and scalable, whether wired or wireless.
- Complete Paralec solution : from the monitoring devices to the current sensors, including the visualization and analysis software

Complete

- Large range of parameters accessible for a complete monitoring solution, whether on surge parameters, or consequence on protection device, through follow current.

Powerful & innovative

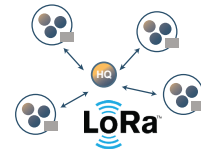
- Daisy chain connection,
- Brand new condition based assessment method,
- Entry level device, simple, affordable, yet meaningful.



Counters summing total charges and total I^2t ($A^2.s$) offers absolute and understandable parameters as per how much the protection device had to endure.



Our online solution allows you to quickly deploy devices whether in wifi, LoRa, or through a mobile telecommunication network.



With a communication range of 2km, the LoRa standard allows the user to locate the sensors on a wide area while keeping a single concentrator.

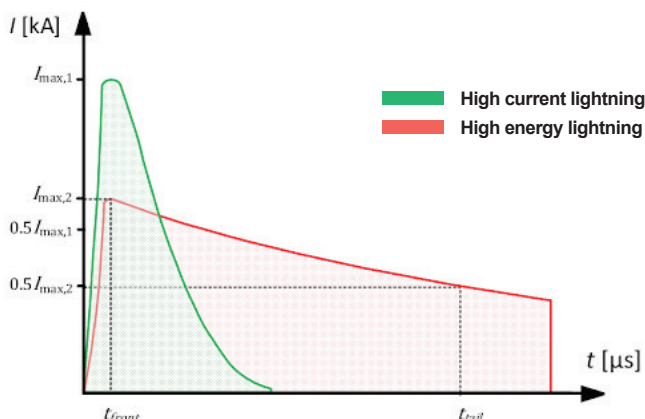
During lightning discharges, power system surge arrester while conducting the discharges from transient, switching or lightning over voltages to the ground, absorb energy. The energy absorption capability is the key limiting factor of surge arrester. To qualify the surge arrester degradation, the leakage current measurement is most common method. However, the energy absorption monitoring method can also be used and shows less disperse values.

The lightning impact can be expressed in term of energy, charge, or action integral. The action integral is integral of the current squared over time, the unit is A^2s , which is the same as J/Ω .

$$\text{Action integral (or } i^2 \cdot t) = \int (i_{\text{discharging}})^2 \cdot dt$$

Where:

$i_{\text{discharging}}$ is the recorded lightning current passing through the surge arrester in μs

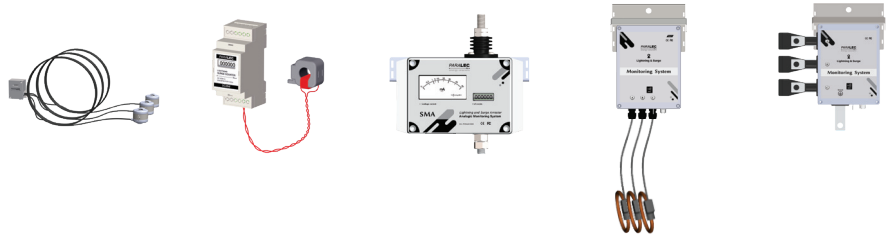


The damage of the surge arrester block depends on the duration(time) and stress(amplitude), which pass through surge arrester, or so called "Energy".

The maximum absorbable energy is mainly used to determine the maximum thermal allowable stress of surge arrester. If this energy value is more than the limit, the cracking, puncture or thermal runaway may occur. The energy calculation and surge counting will be done immediately when the surge arrester operated. Then the energy will be calculated and summed up. If the proper method is applied, the prospective failure and lifetime prediction can be evaluated in a more accurate matter.

SLMD SELECTION GUIDE

	SC250	SC25d	SMA	SLC	SMC
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Characteristics	FEATURES SELECTION	SC250	SC25d	SMA	SLC	SMC
Lightning	Impulse counter : #	■	■	■	■	■
	Minimum detection	250A	250A Outdoor/300A Indoor	100A	200A to 40kA**	200A to 40kA**
	Waveform record : 100us				■	■
	Impulse record : peak(kA), duration(us), polarity				■	■
	Charge(Coulomb) & Let-through (I²t) record				■	■
	Switching counter : #				■	■
Leakage	Record : peak (kA), duration (us), polarity				■	■
	Instant total leakage current			■		■
	Instant and record of leakage current					■
	Waveform record : 1 cycle (16/20ms)					■
Ground fault	Instant & record of resistvie & H3 leakage current					■
	Fault record : peak (kA), duration (us)				■	■
Energy	Total and per event energy : I²t				■	■
	Remaining life span estimation				■	■
Power supply	12VDC				■	■
	Self supplied	via surge	via surge	via surge	via solar panels	via solar panels
Mechanical	IP	68	42	65	65	65
	Available in 1 or 3 phases	■			■	■
	External split or closed core current transformers	■	■		■	
	Internal current transformers			■		■
Communication	NFC				■	■
	RS485				■	■
	LoRa				■	■
	Digital/analogic output	■			■	■
Alarm Alert Indication	End of life				■	■
	Remaining life span estimation basic-embedded				■	■
	Remaining life span advanced-through concentrator				■	■
	Alarm on moisture ingress and external pollution					■
GPS	Localisation and accurate timestamp				■	■

■ * Only on 3P products ** Other ranges available on demand

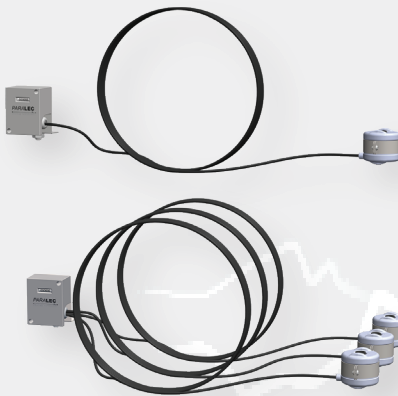
SLMD SELECTION GUIDE

		SC250	SC25d	SMA	SLC	SMC
Applications	APPLICATIONS SELECTION					
High Voltage > 60kV	HV substation - station class arrester			■		■
	HV EGLA	(■)			■	
	HV Transmission Line Arresters			■		■
	HV Current Limiting Gap	(■)			■	■
	Insulator leakage					(■)
Shielding wire / OHLGW	(■)			■		
Medium Voltage < 60kV	MV recloser	(■)			■	
	MV/LV Transformers	(■)				■
	Current Limiting Arcing Horn / MV EGLA	(■)			■	
	Line Lightning Protection Devices LLPD	(■)			■	
	Shielding wire / OHLGW	(■)			■	
Low Voltage < 1V	Indoor SPD		■			
Air Terminals	Lightning SPD	(■)			■	
	Early streamer	(■)			■	

		SC250	SC25d	SMA	SLC	SMC
Category (IEC)	PROTECTION DEVICES SELECTION					
	CLG - Current Limiting Gap	■		■	■	■
	LLPD - Line Lightning Protection Device	■		■	■	■
	LSA - Line Surge Arresters					
	CLAH - Current Limiting Arcing Horn	■		■		■
	EGLA - External Gapped Line Arrester	■		■	■	■
	NGLA - Non Gapped Line Arrester	■		■	■	■
	TLA - Transmission Line Arrester	■		■	■	■
	MOSA - Metal-Oxide Surge Arrester					
	MOA - Metal Oxide Arrester	■		■	■	■
	MOR - Metal Oxide Resistors	■		■	■	■
	SPD - Surge Protection Devices	■	■	■	■	■
	Air Terminal	■		■	■	■
	Lightning Rod	■				
	ESAT - Early Streamer Air Terminal	■				
	Overhead ground wires	■				
	Shielding Wire	■				
	OPGW	■				
	Earth Wire					
	Ground Wire	■		■	■	■

Station Class Arresters, Distribution Class Arresters, Line Surge Arresters, Indoor GIS Arresters, Sheath Voltage Limiters, Special Applications (Capacitors Banks, FACTS..)

SC250 *High sensitivity universal outdoor counter*



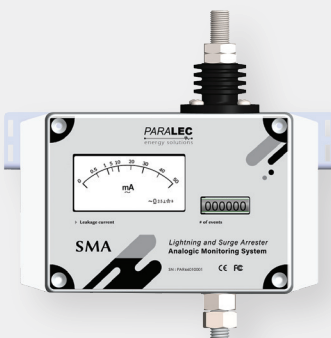
- High measurement performance: from 250 A minimum to 100 kA detection
- Counts lightning impulse separated by more than 20 ms
- Outdoor device : IP68
- No maintenance : self powered device, no battery
- 4-20 mA output (Optional)
- Easy cable installation : up to 3 split cores current transformers, 5 to 25 mm cable diameter
- Easy counter installation : bottom, top, back or strap mounting. Up to 20 m cable length
- Durable device : glass window, stainless steel & HDPE plastic

SC25d *High sensitivity universal indoor counter*



- High measurement performance: from 250A minimum to 100kA detection
- Counts lightning impulse separated by more than 50ms
- Indoor device : IP42
- Outdoor and rugged version of split core current transformer IP68
- No maintenance : self powered device, no battery
- Easy cable installation : 5 to 25mm cable diameter
- Up to 20m cable length

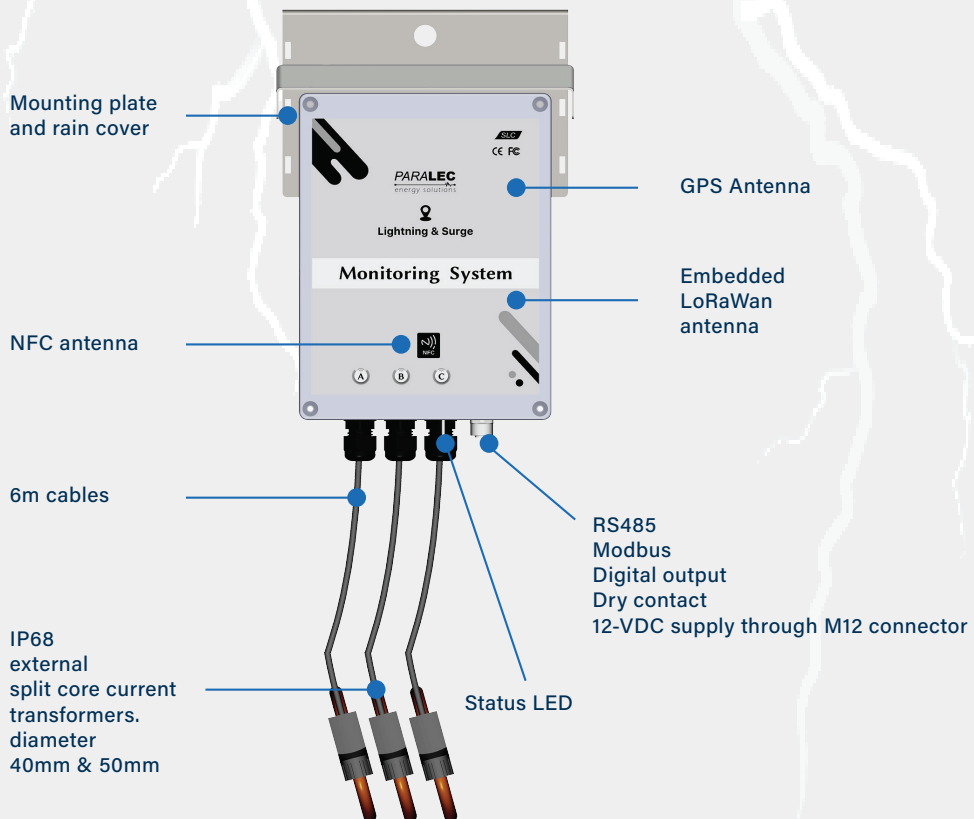
SMA *Analogue Monitoring of surge arrester, MOA*

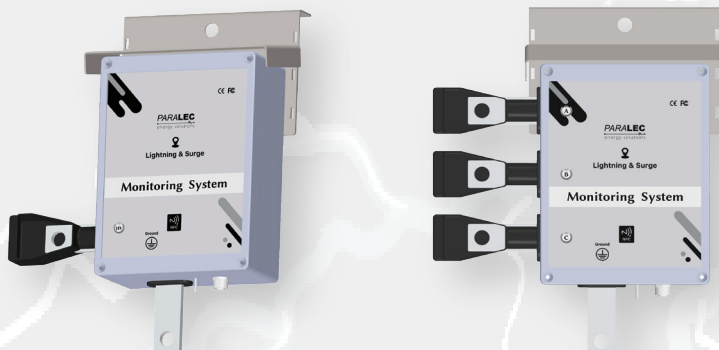


- Analogue total leakage current measurement from 0 to 50 mA
- Surge counting from 100 A minimum to 100 kA detection
- Outdoor and durable device : IP65, glass window, stainless steel, aluminium
- No maintenance : self powered device, no battery
- Easy counter installation : bottom, top, back or strap mounting



- Monitoring of LLPD, EGLA, TLA, CLAH, lightning rods transmission lines, building
- Wired or wireless communication : RS485 modbus, LoRA, NFC
- Outdoor device : IP65
- Solar supply & external supply versions
- Unique condition monitoring : total discharged energy monitoring system, lightning, surge events and discharges record, lightning waveform
- Durable device : Stainless steel, polycarbonate UV resistant, aluminum.
- Up to 3 phases gapped arresters on the same device.
- Monitoring software
- GPS localisation and timestamp





Monitoring of surge arrester, EGLA, MOA, MOR, SPD, TLA.

LoRa and NFC wireless solution. Wired via RS485, Digital output.
Solar supply & external supply versions.

Unique condition monitoring : resistive leakage current & total discharged energy monitoring system, lightning, surge events and discharges records.

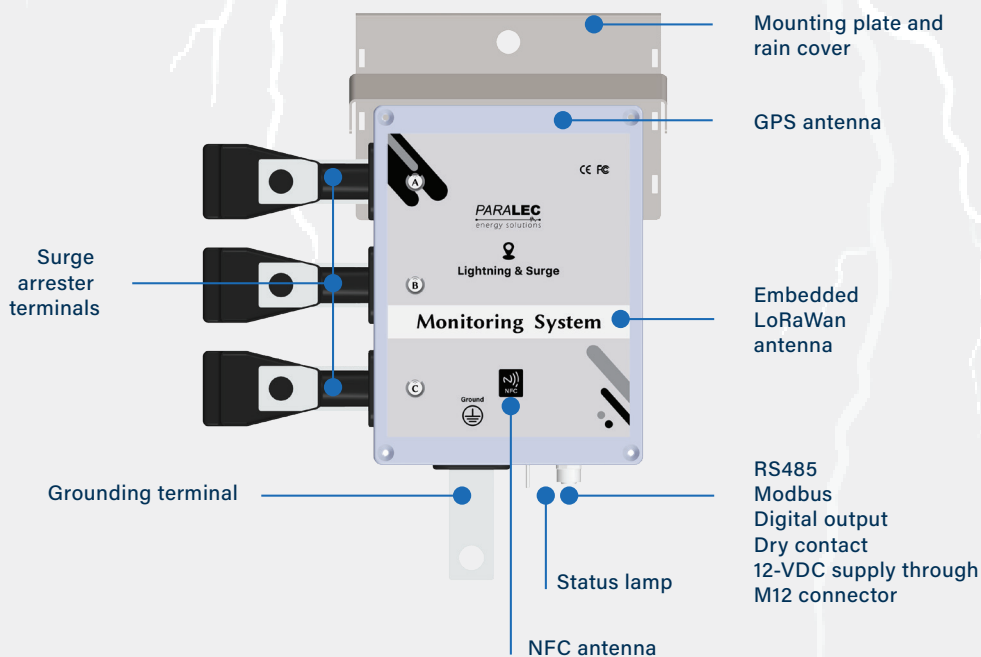
Durable device: stainless steel, polycarbonate UV resistant, aluminum.

Outdoor device : IP65.

Up to 3 phases / surge arresters on the same device.

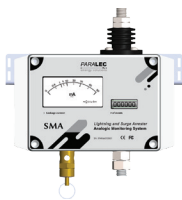
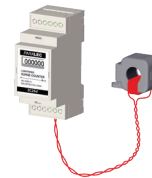
Monitoring software

GPS localisation and timestamp





SCAN

for
E-Brochure




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