

TECHNICAL DATA SHEET

LIGHTNING PROTECTION INTERNATIONAL PTY LTD
Comprehensive Lightning and Surge Protection ABN 11 099 190 897



- Direct Strike Protection
- Earthing Products & Solutions
- Surge & Transient Protection for Power, Data, Communications and RF Lines

LPI® SST Surge Filters

Features

- High performance surge protector for an operating voltage of 200 - 240Vac
- Designed to withstand fault and over-voltage conditions of up to 385Vac, as per IEC61643
- Impulse discharge current 100kA + 50kA 8/20 μ s Ph-N
- Three stage protection provides highest level of protection for sensitive electronic equipment

Product Description



- Designed to suit TT, TN-C, TN-S, TN-C-S & IT distribution systems
- Non-saturating inductors – dv/dt of the incoming surge reduced up to 1000 times
- Primary (100kA 8/20 μ s) and secondary (50kA 8/20 μ s) surge protection
- High N - E protection rating – 100kA 10/350 μ s or 150kA 8/20 μ s
- Status indication and optional surge counter

Electronic equipment is highly susceptible to damage from lightning and other transient pulses (including man made switching transients), which arrive via the powerlines through direct strike, or inductive and capacitive coupling. Efficient filtering and clamping at the point of entry of power feeds to sensitive electronic equipment is essential to mitigate physical equipment damage, loss of operations and economic loss.

The LPI Surge Filter provides multiple stage protection against incoming surges & transients and shall be installed in series with the incoming 200-240Vac single phase (Phase – Neutral) mains power supply to the equipment or building. Shunt-only clamping alone is not sufficient, as it does not limit the excessive wavefront characteristic of the pre-clamped waveform. The LPI Surge Filter will reduce the rate of rise of voltage (dv/dt) to below 15V/ μ s as per AS1768 Cat B 3kA (8/20 μ s) applied impulse and to below 30V/ μ s for AS 1768 Cat C 20kA (8/20 μ s) applied impulse.

The Surge Filter is designed for multistroke lightning events and comes with the SST (Smart Surge Technology) as the primary protection, rated at 100kA 8/20 μ s per phase, as the first stage to absorb the majority of the energy. The SST offers the ultimate level of safety and reliability whilst retaining optimum protection levels critical for electronic equipment. SST ensures that the protection device is virtually immune to the effects of 50/60 Hz sustained over voltages, allowing fault voltages up to 385Vac, in accordance with IEC61643 requirements.

The second stage consists of low pass non-saturating inductors and capacitors (L-C Filtering) which further attenuates the let-through voltage already clamped by the primary stage. The filter attenuates noise and any harmonics present on the power system and is designed to attenuate transverse and common mode noise. The third stage consists of further surge diverters rated at 50kA 8/20 μ s connected across the load side. These are designed to suppress surges generated by load side equipment.

LPI Surge Filter limits the voltage differential due to a lightning induced impulse between phase and neutral as well as from neutral to ground. Thus providing both common mode and differential (transverse) mode protection. Neutral to earth protection rated at 100kA 10/350 μ s (150kA 8/20 μ s) is provided to limit feedback currents if the site earth goes high potential with respect to the sub-station or transformer earth. This is a common occurrence due to a near-by direct strike.

Description	LPI® SST Surge Filters
Rated voltage:	200 – 240Vac Ph - N @ 50/60Hz
Max continuous fault voltages @ 50/60Hz:	385Vac, as per IEC 61643 requirements
Operating time:	< 1ns
Power distribution systems:	TT, TN-S, TN-C, TN-C-S (MEN)
Primary surge protection rating Ph-N:	100kA 8/20µs single shot surge capacity
Secondary surge protection rating Ph-N:	50kA 8/20µs single shot surge capacity
N – E protection:	100kA 10/350µs or 150kA 8/20µs
Protection Modes:	Transverse and common mode
Inductor:	Non-saturating, low pass, power and noise filtering
Capacitor type:	Self healing polypropylene
Surge counter (Optional**):	7 Digit electro-mechanical display
Current crest factor:	> 3:1
Voltage drop:	< 2V at full load
Efficiency:	99%
Overload / short circuit protection:	In-line circuit breaker
Performance:	Typical let-through voltage < 600V
Filter 3dB point:	Approx 6000Hz.
Standards (Primary and secondary):	IEC 61643-1, Meets UL1449 Ed 3 requirements
Standards (N - E):	IEC 61643-1
Surge withstand: Cat. A,B and C surge tests	ANSI/IEEE C62.41 and AS 1768
Protection status indication:	Status indication, and remote alarm contact
Environmental rating:	IP 65
Enclosure:	Metal enclosure with durable polyester powder coat finish
Colour:	Oyster grey
Mounting:	Wall mount
Operating temperatures:	0 to +50°C, 0 – 95% humidity ¹
Conductor size:	Accepts up to 35mm ²
Warranty:	5 Years manufacturer's warranty

¹ SF363A operating temperature 0 to +45°C at maximum load

Ordering Code	Description	Phase	Rated Voltage Ph - N	Dimensions (mm)	Weight (Kg)
SF132A-NE	Surge Filter, 1Ph, 32A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts	1	200 – 240V (50-60Hz)	300x200x150	6
SF132A-NEC	Surge Filter, 1Ph, 32A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts + Counter	1	200 – 240V (50-60Hz)	300x200x150	6
SF140A-NE	Surge Filter, 1Ph, 40A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts	1	200 – 240V (50-60Hz)	300x200x150	6
SF140A-NEC	Surge Filter, 1Ph, 40A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts + Counter	1	200 – 240V (50-60Hz)	300x200x150	6
SF163A-NE	Surge Filter, 1Ph, 63A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts	1	200 – 240V (50-60Hz)	300x200x150	6
SF163A-NEC	Surge Filter, 1Ph, 63A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts + Counter	1	200 – 240V (50-60Hz)	300x200x150	6
SF332A-NE	Surge Filter, 3Ph, 32A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts	3	200 – 240V (50-60Hz)	400x300x150	12
SF332A-NEC	Surge Filter, 3Ph, 32A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts + Counter	3	200 – 240V (50-60Hz)	400x300x150	12
SF340A-NE	Surge Filter, 3Ph, 40A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts	3	200 – 240V (50-60Hz)	400x300x150	12
SF340A-NEC	Surge Filter, 3Ph, 40A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts + Counter	3	200 – 240V (50-60Hz)	400x300x150	12
SF363A-NE	Surge Filter, 3Ph, 63A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts	3	200 – 240V (50-60Hz)	400x300x150	12
SF363A-NEC	Surge Filter, 3Ph, 63A, 100+50kA 8/20µs Ph - N, SST, 100kA 10/350µs NE, Status Indication, Alarm Contacts + Counter	3	200 – 240V (50-60Hz)	400x300x150	12

Add "BP to part number for Backplane version. BP version have the same footprint as shown for the enclosure version

Installation

All installation work ***must*** be carried out by licensed electrical personnel.

The power ***must*** be disconnected. Ensure no dangerous neutral to earth voltages exist prior to commencing installation work.

1. The SF unit should be installed as close as practical to the Power Distribution Panel.
2. Affix the SF unit firmly to the wall.
3. The input and output power cables that connect to the SF unit must have a current rating at least equal to that of the unit being installed. If operating 63A rated filters at loads in excess of 53A or in ambient temperatures in excess of 40°C, the use of input/output cables rated for temperatures of up to 130°C is required.
4. Route power cables to the correct side of the unit (input cables to input side of the SF unit, and output cables to output side). Suitable IP65 rated cable glands, with a flammability rating of at least V1 should be employed at the point of entry to the filter enclosure.
5. Connect the input and output power lines as illustrated in Figure 1 (for single phase units) and Figure 2 (for three phase units).
6. The earthing impedance of the electrical system should be less than 10Ω, with 5Ω recommended.
7. Connect the Earth terminal on the SF unit to the nearest electrical main earth using the shortest possible route. Earthing conductor should be a minimum of 6mm², with 16mm² recommended.
8. All connections must be rechecked to confirm that they are securely connected.
9. Connect power to the surge filter and confirm that power is being delivered to the load and that all status indicators are green. The surge filter is in series with the load and turning off the filter's internal circuit protection will disconnect power to the load.

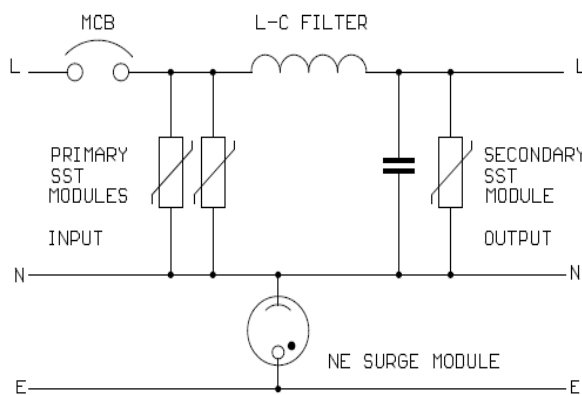


Figure 1. Schematic of 1Ø Surge Filter



Figure 2. Schematic of 3Ø Surge Filter

Maintenance

1. The status indicators on all SST protection modules should always be green.
2. Replace any surge diverter when the corresponding indicator has changed to red or the remote status monitoring is indicating failure of the diverter.
3. Do not perform maintenance work until power to the surge filter has been disconnected.
4. All surge protection devices will degrade and must be replaced at the end of their life cycle. The frequency of replacement is subject to the magnitude and number of incident surges applied to the device – therefore status indication is very important.

Remote Status Indication

A set of voltage-free contacts integral to each of the SST protection modules (primary and secondary) provides the facility to monitor the protection status of the SF Filter remotely.

With the protection module fully operational, the status indicator will be green and terminals 1 & 2 on the remote monitoring terminals will be connected.

When the SST protection module MOV material degrades to a point where replacement is necessary, the status indicator will change to red and the voltage free contacts will change state so that terminals 2 & 3 are



Figure 3. Remote Status Monitoring voltage-free contacts on protection module

Note and Remarks

LPI® has a policy of continuing product development. Therefore, the above specifications are subject to change without notice.

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