

LIGHTNING PROTECTION INTERNATIONAL PTY LTD



LPI BLUETOOTH SURGE PROTECTION RANGE



Comprehensive Lightning, Surge Protection & Earthing Solutions www.lpi.com.au

TECHNICAL DATA SHEET

LPI® Bluetooth Surge Protection Range

Introducing LPI’s patented Bluetooth surge protection range of products. A state-of-the-art circuit designed to meet the latest IEC requirements combined with Bluetooth 4.1 low-power communication for cost-effective remote monitoring.

Key Benefits

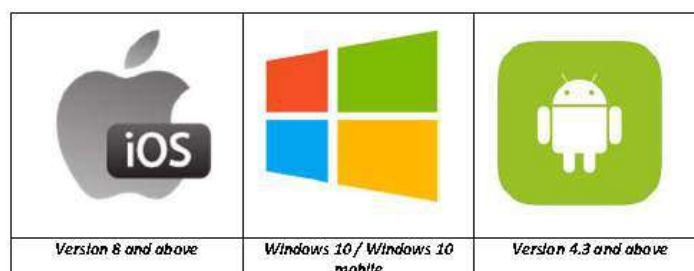
- App-based operation removes the need for switchboards to be opened manually when undertaking maintenance checks for surge protection purposes
- The App-based operation allows for maintenance checks to be undertaken remotely by non-technical personnel
- Plug and base assembly for easy installation and maintenance
- Alarm Interface Modules (AIM) allow for standalone or integrated communication
- High performance surge protector for Class II applications
- Thermal and short-circuit disconnect
- 50 kA surge rating capacity



Key Features

- Bluetooth 4.1 communication provides feedback on critical operating elements
- Memory retention of the latest values stored in the SPD module
- Easy pairing and interrogation of SPD for quick and simple diagnostics
- Integrated surge counter in each module
- Individual device identifier tag
- Instant status indication for each module

Available for the following operating platforms:



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With the aid of the optional Alarm Interface Module (AIM), we can now provide unprecedented connectivity between LPI SPDs. AIM can auto-detect up to 19 x SST150B modules within its range and provide individual data upon request.

Table 1.

Alarm Interface Module output options



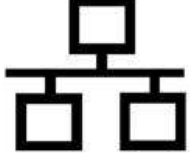

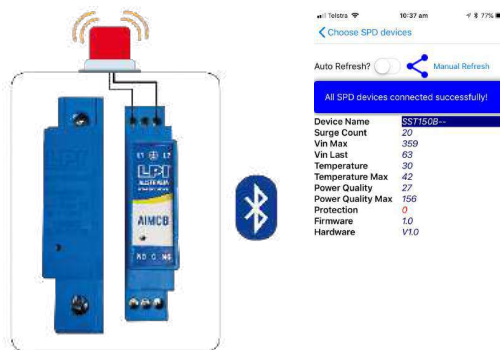
| | | | |
|---|---|---|--|
|  |  |  |  |
| AIMCB | | AIME | AIMW |
| 1st Release | | Future Release phase | Future Release Phase |

Figure 1. Auto connectivity via free LPI SPD APP and your preferred Bluetooth enabled device allows communication with SST150B inside enclosure to read back critical information.



Figure 2. If local alarm indication is required, the AIMCB will auto pair to the SST150B and allow volt-free contacts to be initiated, with future releases allowing for simultaneous Bluetooth communication.



Note: LPI does not supply external warning lights or other associated accessories

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The following images provide a snap shot of the information provided to the user via LPI's range of Bluetooth surge protection products.



Operational



Replace as protection is reduced



Replace as no protection is left

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LPI® SPD Module (Single Module and Base)

The LPI SSTB150 is a single mode power line shunt surge protection device rated for 50 kA 8/20 μ s single shot surge capacity (I_{max}). The unit is designed for mounting at main power switchboards and distribution boards in category C locations as per the IEC and other international standards.

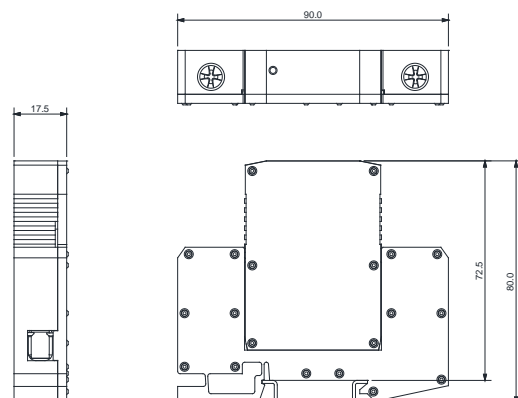
The LPI SSTB150 is designed to provide surge and transient protection in compliance with IEC 61643 international standards. The design allows it to be configured for Ph-N protection applications for single or multiple phases as required. It is also designed for easy mounting on standard 35 mm DIN rail.

The unit comes with fast, responsive Metal Oxide Varistors (MOV) to provide effective surge protection with low let-through voltage to protect sensitive electronics and electrical circuits.

The unit comes as a two-part item. The base is hardwired into the circuit to be protected, and the protection module is plugged into this base. This enables easy replacement of protection modules should they be degraded or damaged by excessive transient activity. The SSTB150 is supplied with Bluetooth connectivity as detailed in previous pages (refer to page 3).

Technical Specifications

| | |
|-------------------------|---|
| Protection Modes: | Ph-N |
| Status Indication: | LED display: showing operational condition |
| Bluetooth Connectivity: | Status indication, operating voltage, Harmonic THD %, Internal temp & Surge Impulse Count |
| Mounting: | TS 35 mm – DIN43880 DIN rail |
| Weight: | Approx. 135 grams |
| IP Rating: | IP 20 |
| Colour: | Blue |
| Conductor Size: | 35 mm ² (Max) |
| Operating Temperatures: | -20 to +40 °C, 0 – 95 % humidity |
| Designed to Conform to: | IEC 61643-11 & UL 1449 Ed4 where applicable |
| Surge Withstand: | ANSI C62.41 Cat A, Cat B, Cat C, AS/NZS 1768-2007 Cat A, Cat B, Cat C |
| Application: | Main and sub-distribution boards |
| Configuration: | Hardwired base and pluggable module |
| Warranty: | 5 years |



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LPI® Bluetooth Surge Protection Range

Single Module and Base

| Product Code: | Nominal Operating Voltage U_n : @ 50/60 Hz | Surge Rating (I_{max}): @ 8/20 μ s | Nominal Discharge Current (I_n): @ 8/20 μ s | Max. Continuous Operating Voltage (U_c): | Voltage Level at 20 kA 8/20 μ s: | Response Time: | Power Distribution Systems: |
|--------------------|--|--|---|--|--------------------------------------|----------------|-----------------------------|
| SST150B-385 | 220-240 Vac | 50 kA | 20 kA | 385 Vrms | <1.3 kV | <5 ns | TN, TT & for L-N mode |
| SST150B-480 | 220-277 Vac | 50 kA | 20 kA | 480 Vrms | <1.7 kV | < 5 ns | TT & TN |

Replaceable Surge Module

| Product Code: | Nominal Operating Voltage U_n : @ 50/60 Hz | Surge Rating (I_{max}): @ 8/20 μ s | Nominal Discharge Current (I_n): @ 8/20 μ s | Max. Continuous Operating Voltage (U_c): |
|---------------------------|--|--|---|--|
| SST150B-385-Module | 220-240 Vac | 50 kA | 20 kA | 385 Vrms |
| SST150B-480-Module | 220-277 Vac | 50 kA | 20 kA | 480 Vrms |

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Installation Guide for SST150B

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

Location:

The shunt protection device should be installed at the “point of entry” of the power mains, but after the power meter and main breaker in order to protect downstream power connected equipment.

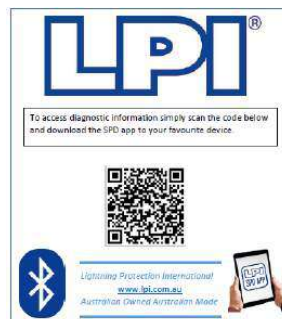
Installation:

Refer to table for recommended fuse and cable sizes.

1. Ensure power is disconnected prior to commencing installation.
2. The unit is labelled showing the incoming (point of entry) and outgoing (load) terminals to be used for enclosure and backplane units only.

PHASE IN and PHASE OUT are at the top of the unit whilst the EARTH and NEUTRAL are at the bottom.

3. Ensure that the “V” or Kelvin connections as per figure 3a. are observed.
4. Incoming cabling should enter the enclosure or backplane from the bottom.
5. The earth terminal must be connected to a low impedance earth (<10 Ω) deploying a single point earthing system, which should be connected to an equipotential earth plane. Integral to this is the elimination of earth loops. It is common, but incorrect from the point of lightning protection to have separate earths for various services. The use of single or multi core copper earth cable of not less than 25 mm² (max. 35 mm²) is recommended.
6. Once connections are completed apply power and observe correct operation, place the provided LPI APP sticker to the outside of the enclosure or cabinet as to indicate Bluetooth connection is available to the surge diverter.



LPI App Sticker

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Connection options:

1. It is recommended that the “V” or Kelvin connection be employed as shown at Figure 3a to minimise the over voltage applied on the protected equipment. Be sure not to run input and output wiring parallel.

2. If “V” connection is not possible, “T” connection is preferred as shown at Figure 3b. With this connection method, the input lead length should be kept as short and thick as possible and the wires should be bundled together.

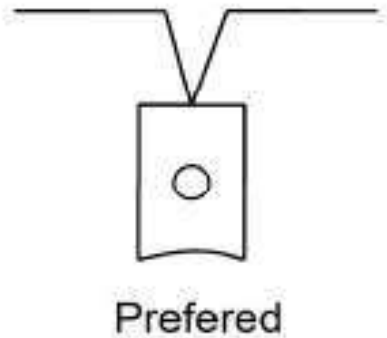


Figure 3a. Connection to Modules

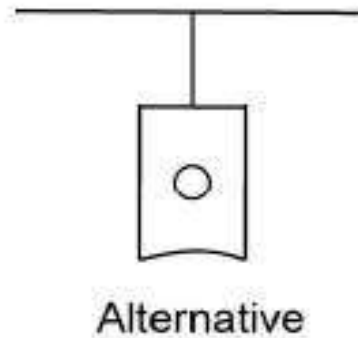


Figure 3b. Alternative Connection

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LPI® Neutral / Earth Module



Features

- Encapsulated spark gap technology
- Low follow on current
- 35 mm DIN rail mount
- NE-15B Bluetooth Connectivity

The LPI NE range lightning arrester is intended for applications in unmeasured parts of electrical installations within the lightning protection zones concept at the boundaries LPZ 0 A(B) -1 (according to IEC 62305-4).

The LPI NE range of lightning arresters are constructed as encapsulated (non-venting) chamber carbon spark gaps.

The LPI NE range is a single pole neutral–earth high energy protection device to protect electronic equipment from lightning current surges.

Technical Specifications

| Product Code: | NE-15B | NE-100 |
|--|---|--|
| Nominal Operating Voltage: Un | 230 V/50 Hz | |
| Max. Continuous Operating Voltage: U _c | 255 V/50 Hz | |
| Voltage Protection Level at Limp: U _p | <1.5 kV | <1.5 kV |
| Max. Lightning Impulse Current: I _{imp} | 15 kA (10/350 μs) | 100 kA (10/350 μs) |
| Max. Lightning Impulse Current: I _{max} | 80 kA (8/20 μs) | 150 kA (8/20 μs) |
| Specific Energy: W/R | 50 kJ/Ω | 2500 kJ/Ω |
| Insulation Resistance: R _i | >1000 MΩ | |
| Response Time: t _A | <100 ns | |
| Standard: | IEC 61643 and EN 61643 | |
| Operating Temperature Range: | -40 to +80 °C | |
| Recommended Cross-Section of Connected Conductors: | 10 mm ² (at 3 Nm clamping force) | 50 mm ² (solid) or 35 mm ² (flexible) (at 4 Nm clamping force) |
| Status Indication: | LED display: showing operational condition | - |
| Bluetooth Connectivity: | Status indication, operating voltage, Harmonic THD %, Internal temp & Surge Impulse Count | - |
| Protection Type: | IP 20 | |
| Mounting: | DIN rail 35 mm | |
| Housing Material: | SLOVAMID 6FRC2 | |
| Colour: | Blue | |
| Weight: | 135 g | 231 g |
| Application: | Main and sub-distribution boards (between N&E conductors only) | Main and sub-distribution boards (between N&E conductors only) |
| Dimensions: | 80 (H) x 17.5 (W) x 90 mm (L) | 65 (H) x 35 (W) x 90 mm (L) |
| Warranty: | 5 Years | |

IMPORTANT INFORMATION:

NE-15B: The Neutral and phase terminals are polarity sensitive, installation to be completed as per illustrations instructions.

NE-100: This unit is not Bluetooth enabled.

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LPI® Alarm Interface Modules



AIMCB

- Instant connection to surge units, no interaction required
- Ability to connect to 19 x SST150B units
- Combination of Bluetooth communication and volt free contact output



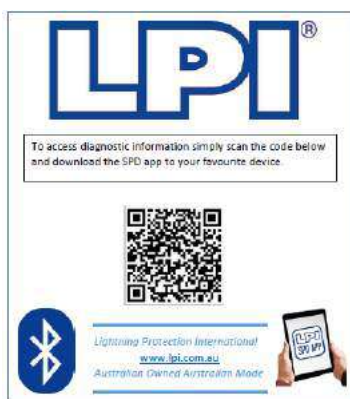
AIMCB for DIN mount use

Technical Specification

| | |
|-------------------------|---|
| Product Code: | AIMCB |
| Status Indication: | LED showing operational condition |
| Bluetooth Connectivity: | Status indication |
| Mounting: | TS 35 mm – DIN43880 DIN rail |
| Weight: | Approx. 135 grams |
| IP Rating: | IP20 |
| Colour: | Blue |
| Conductor Size: | 2.5 mm ² |
| Operating Temperatures: | -20 to +60 °C, 0 – 95 % humidity. |
| Contact Rating: | Max switching voltage: 250 Vac / 220 Vdc Max switching current: 2 A Max carrying current: 2 A Max switching power: 60 W / 125 VA |

Accessibility

The alarm and surge modules are accessible through the LPI SPD App. Simply scan the QR code below or from the LPI sticker located on applicable enclosures to be taken to the LPI website and choose from iOS, Android or Windows applications.



Sample sticker



LPI SPD APP QR code

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DIN Mount and PPM Range

Module Combination DIN Mount (DR)

Single or 3 phase combinations

- Pre-wired, DIN-Rail mounted, ready for quick install
- Customisable to kA rating capacity
- Dedicated neutral-earth protector

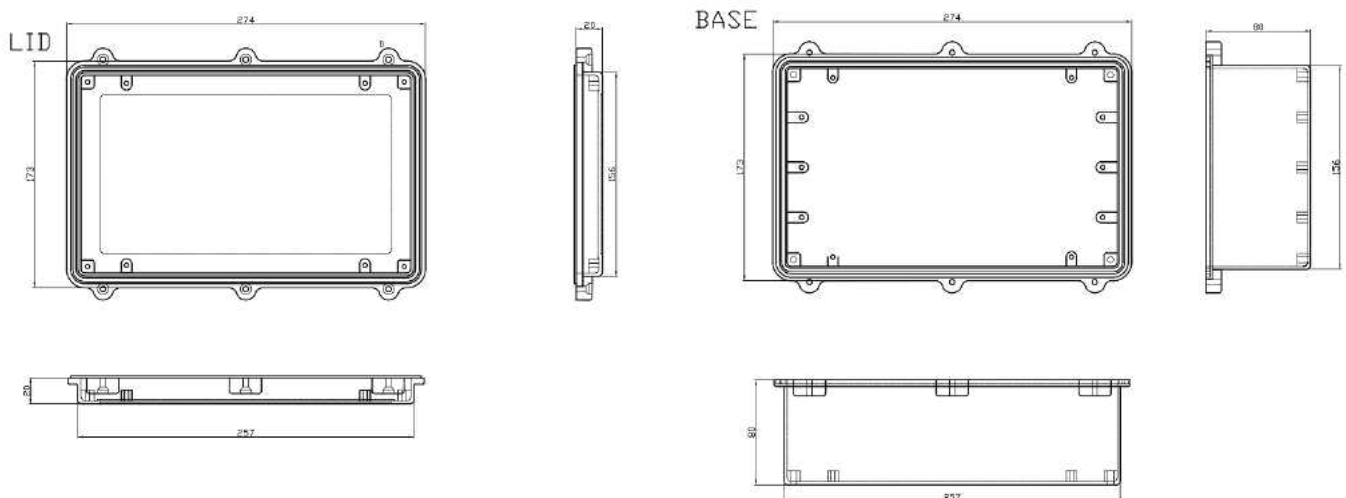
**Compact Enclosure (PPM)**

- IP67
- Surface mount
- Aluminium enclosure
- Single or 3 phase applications
- With or without integrated connection leads
- Small compact installation
- Connection leads Flexible multi-core (4 core + earth), 16 mm², Earth 4 mm², XHF-110 supplied as 1.5 m length. Installer should cut to length to suit installation
- Screw down lid



Notes:

1. Refer to Page 5 for SST150B specification detail.
2. Refer to Page 11 for neutral to earth protector specification detail.
3. Refer to page 12 for alarm module specification detail.

Enclosure

IP67 base complete with gasket, aluminium light grey painted, surface mount via external feet

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DIN Mount & PPM Part Number Key

| Key | Connection Type | Code | Key | Mounting | Code | Key | Surge Rating | Code |
|-----|-----------------|------|-----|----------------------------|------|-----|--------------|-------|
| A | Single Phase | 1 | A | Metal Enclosure | PPM | A | 50 kA | 50KA |
| B | 3 Phase | 3 | B | Din Mounted (No Enclosure) | DR | B | 100 kA | 100KA |
| C | Split Phase | 2 | C | Backplane | BP | C | 150 kA | 150KA |
| | | | | | | D | 200 kA | 200KA |

| Key | MCOV | Code | Key | Neutral / Earth | Code | Key | Alarm Module | Code |
|-----|-------|------|-----|------------------------------|-------|-----|---------------------------|-------|
| A | 385 V | 385V | A | NE15B | NE15B | A | Contact / Bluetooth | AIMCB |
| B | 480 V | 480V | B | NE100 | NE100 | B | Alarm Module Not Required | |
| | | | C | Neutral / Earth Not Required | | | | |

Sample

AAB-A-A-A = 1PPM100KA-385V-NE15-AIMCB

Connection Lead for PPM

- If connection lead is required to be supplied with PPM add "T" to product code following "PPM"
Example: 1PPMT100KA-385V-NE15-AIMCB
- Connection lead is supplied as a 1.5 m length
- Installation contractor should cut length of lead to suit installation

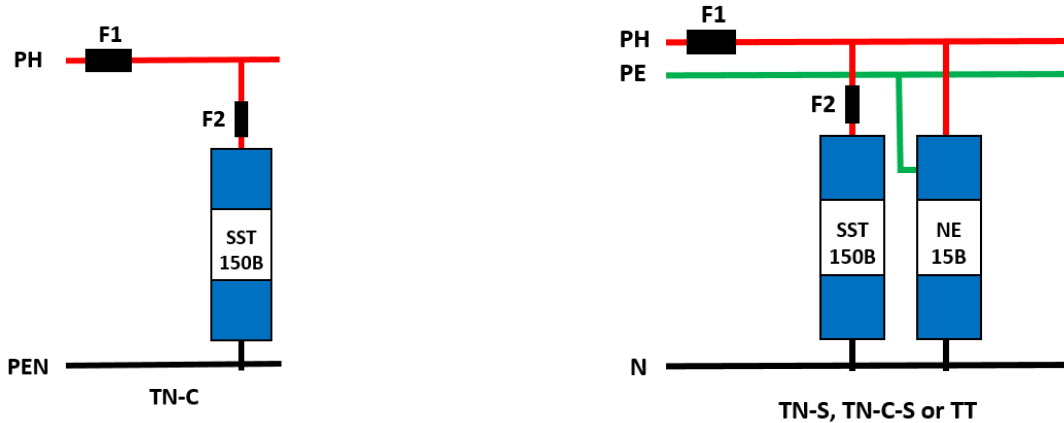
TECHNICAL DATA SHEET

Installation Guide for DR Product Range Including Neutral/Earth Range

IMPORTANT INFORMATION:

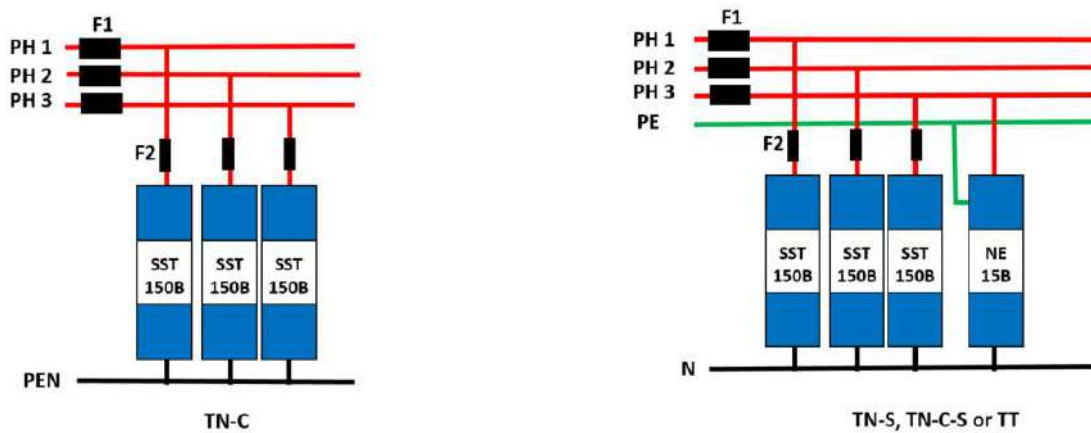
NE-15B: The Neutral and phase terminals are polarity sensitive, installation to be completed as per illustrations below.

Connection Diagram for 1DR50KA-385-NE15B



Note: For 100 kA and above, connect the Ph1 to one of the SST150B modules only.

Connection for 3DR50KA-385-NE15B



Note: For 100 kA and above, connect the Ph1, Ph2 and Ph3 to the first, third and fifth SST150B modules only

Recommended Fuse and Cable Sizes

| Fuse F1 gL/gG | C2 mm ² connection at F2 | C3 mm ² connection to gnd | Fuse F2 gL/gG |
|------------------|--|---|------------------|
| 25 A-100A | 10 | 16 | - |
| 100A-125A | 16 | 16 | - |
| 125-160A | 16 | 16 | - |
| ≥160 A | 16 | 16 | 125A |

Fuse and cable size for NE-15B

| Fuse F1 gL/gG | C2 mm ² connection at F2 | C3 mm ² connection to gnd | Fuse F2 gL/gG |
|------------------|--|---|------------------|
| 25 A-100A | 10 | 16 | - |
| 100 A-160A | 16 | 16 | - |
| 160A -200A | 16 | 16 | - |
| 200A-500 A | 16 | 16 | - |
| ≥500 A | 16 | 16 | 125A |

Fuse and cable size for NE-100

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Installation Guide for DR Product Range including Neutral/Earth Range

| | |
|--|--|
| | |
| | |
| | |

TECHNICAL DATA SHEET

Installation Guide for PPM Product Range

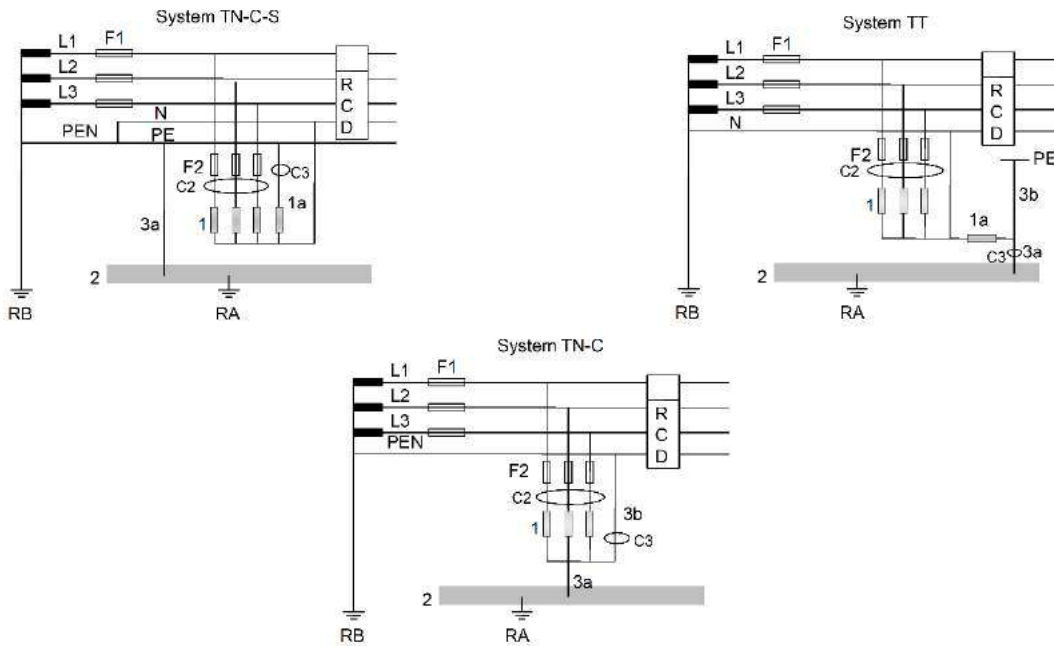
All installation work must be carried out by a licensed electrical personal

Location

The Shunt Protection device should be installed at the “Point of Entry” of the power mains, but after the power meter and main breaker so as to protect the downstream power connected equipment.

Ensure power is disconnected prior to commencing installation.

1. The unit is labelled showing the incoming (point of entry) terminals to be used. PHASE IN are at the top of the unit whilst the EARTH and NEUTRAL are at the bottom.
2. Ensure that the “V” or Kelvin connections, refer Page 8.
3. Incoming cabling should enter the enclosure on the left-hand side and load side cables should exit the enclosure on the right-hand side. This separation is important to ensure induction from “dirty” to “clean” lines does not occur.
4. The earth terminal must be connected to a low impedance earth (<10 Ohms) deploying a single point earthing system, which should be connected to an equipotential earth plane. Integral to this is the elimination of earth loops. It is common, but incorrect from the point of lightning protection to have separate earths for various services. The use of single or multi core copper earth cable of not less than 25 mm² (Max. 50 mm²) is recommended.
5. Once connections are completed apply power and observe correct operation.



Recommended Fuse and Cable Sizes

| Fuse F1 gL/gG | C2 mm ² connection at F2 | C3 mm ² connection to gnd | Fuse F2 gL/gG |
|------------------|--|---|------------------|
| 25 A-100 A | 10 | 16 | - |
| 100 A-125 A | 16 | 16 | - |
| 125A- 200A | 16 | 16 | - |
| 200A-500 A | 16 | 16 | - |
| ≥500 A | 16 | 16 | 125A |

All PPMs are supplied with cable ties securing SST150B modules for transport purposes only. Remove all cable ties when installing.

TECHNICAL DATA SHEET

LPI® Bluetooth Range of Surge Filters

Features



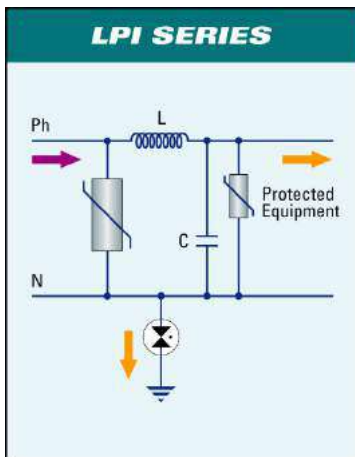
- High performance surge protector for an operating voltage of 220-277 Vac
- SSTB150 technology for primary and secondary protection 32 A- 125 A (1 Ph & 3 Ph)
- Encapsulated spark gap and SSTB150 technology capable of operation under fault/overvoltage conditions up to 480 Vrms for 200 A filter and above
- Three stage protection provides highest level of protection for sensitive electronic equipment

Product Description

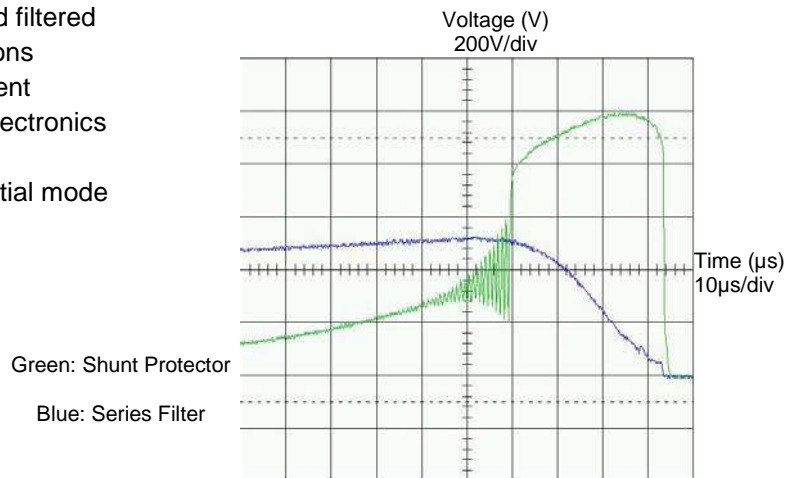
- Designed to suit TT, TN-C, TN-S & TN-C-S distribution systems
- Inductors – dv/dt and di/dt of the incoming surge will be reduced by 1000 times
- 32 – 125 A filters primary (150 kA 8/20 µs) and secondary (50 kA 8/20 µs)
- 200 – 630 A filters primary (50 kA 10/350 µs, 135 kA 8/20 µs) and secondary (50 kA 8/20 µs) surge protection. (NOTE: For 800 A and above, primary protection is 110 kA 10/350 µs.)
- High N-E protection rating– 100 kA 10/350 µs, 150 kA 8/20 µs
- LED Indication, remote alarm contacts, MOV status indication.

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.

The LPI Bluetooth series surge filter provides multiple stage protection against incoming surges & transients. 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 15 V/µs as per AS1768 Cat B 3 kA (8/20 µs) applied impulse and to below 30 V/µs for AS 1768 Cat C 20 kA (8/20 µs) applied impulse.



- Low let-through voltage
- Wavefront slowed (low)
- Energy diverted and filtered
- Poor power conditions
- Based on load current
- Vital for sensitive electronics
- Fine protection
- Common & differential mode



TECHNICAL DATA SHEET

LPI® Bluetooth Range of Surge Filters 32-125 A (Single and Three Phase)

Technical Specifications

| Description | LPI® Bluetooth Range of Surge Filters 32-125 A (Single and Three Phase) |
|---|--|
| Nominal Operating Voltage U_n : | 220 – 240 V AC P-N @ 50/60 Hz 220 - 277 |
| Max Continuous Operating Voltages U_c : | 385 Vrms 480 Vrms |
| Operating Time: | < 1 ns |
| Power Distribution Systems: | TT, TN-S, TN-C, TN-C-S (MEN) |
| Primary Surge Protection Rating P-N: | Configurable 100 kA 8/20 μ s single-shot rating replaceable modules* ¹ |
| Secondary Surge Protection Rating P-N: | Configurable 50 kA 8/20 μ s single-shot rating replaceable modules* ² |
| N-E Protection: | 100 kA 10/350 μ s I_{imp} Class 1 to IEC 61643-11 255 V rms or 150 kA 8/20 μ s I_{max} |
| Protection Modes: | Transverse and common mode |
| Inductor: | Non-saturating, low pass, power and noise filtering |
| Capacitor Type: | Separately-fused, self-healing, X-grade rating at high voltage ratings |
| Surge Counter : | Build-in memory retained surge counter displayed via LPI SPD App |
| Efficiency: | 99 % |
| Overload / Short Circuit Protection: | In-line circuit breaker, for 32 A, 40 A and 63 A only |
| Performance: | Typical let-through voltage < 700 V |
| Filter 3 dB Point: | Approximately 4000 Hz |
| Standards (Primary and Secondary) : | Meets requirements of IEC 61643-11 and UL1449 Ed 3 |
| Standards (N-E): | Meets requirements of IEC 61643-11 |
| Surge Withstand: | ANSI/IEEE C62.41, AS/NZS 1768 Cat. A, B and C surge tests |
| Protection Status Indication: | Bluetooth connectivity on status of MOV, surge counts, voltage and temperature. LED Status and voltage-free change-over contact output |
| Environmental Rating: | IP 66 |
| Enclosure: | Metal enclosure with durable powder coat finish |
| Colour: | Grey |
| Mounting: | Wall mount |
| Operating Temperatures: | -20 to +40 °C, 0 – 95 % humidity |
| Conductor Size: | Accepts up to 35 mm ² (M8 Studs) |
| Warranty: | 5 years manufacturer's warranty |

*1 Configurable 50, 100, 150 or 200 kA 8/20 μ s

*2 Configurable 50 or 100 kA 8/20 μ s

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LPI® Bluetooth Range of Surge Filters 200 A and Above (Three Phase)

Technical Specifications

| Description | LPI® Bluetooth Range of Surge Filters 200 A and Above | | |
|--|---|---------------------|-----------|
| Nominal Operating Voltage Un: | 220 – 240 | V AC P-N @ 50/60 Hz | 220 - 277 |
| Max Continuous Operating Voltage Uc: | 385 Vrms | | 480 Vrms |
| Operating Time: | < 1 ns | | |
| Power Distribution Systems: | TT, TN-S, TN-C, TN-C-S (MEN) | | |
| Primary Surge Protection Rating per Phase: | 135 kA 8/20 μ s single shot surge capacity between phase and neutral. 800 A and above, phase to neutral protection is 110 kA 10/350 μ s. | | |
| Secondary Surge Protection Rating per Phase: | 50 kA 8/20 μ s single shot surge capacity between phase and neutral, Bluetooth Technology | | |
| Total Surge Protection per Phase: | 185 kA 8/20 μ s | | |
| N–E Protection: | 100 kA 10/350 μ s, 150kA 8/20 μ s. For 800 A and above, neutral to earth protection is 110 kA 10/350 μ s. | | |
| Protection Modes: | Transverse and common mode | | |
| Inductor: | Ferro cored, low pass, power and noise filtering | | |
| Capacitor Type: | Self-healing X grade | | |
| Surge Counter : | Build-in memory retained surge counter displayed via LPI SPD App | | |
| Current Crest Factor: | > 3:1 | | |
| Voltage Drop: | < 2 V at full load | | |
| Efficiency: | 99 % | | |
| Frequency Response: | 3 dB point below 3000 Hz | | |
| Performance: | Typical let-through voltage for all models < 2 x mains peak voltage | | |
| Standards (Primary and Secondary): | IEC 61643-1 | | |
| Standards (N-E): | IEC 61643-1 | | |
| Surge Withstand: | ANSI/IEEE C62.41 and AS 1768 Cat. A, B and C surge tests | | |
| Environmental Rating: | IP 66 | | |
| Enclosure: | Metal enclosure with durable polyester powder coat finish | | |
| Colour: | RAL 7032 | | |
| Mounting: | Wall mount | | |
| Operating Temperatures: | -35 to +40 °C, 0 – 95 % humidity | | |
| Warranty: | 5 years manufacturer's warranty | | |

TECHNICAL DATA SHEET

Specification Detail for SPD Modules Used in Surge Filters

LPI® Bluetooth Connectivity for Surge Filters

Refer to Page 3 for further details.

| | | |
|---------------------|--------------------------------|-----------------------|
| | | |
| Version 8 and above | Windows 10 / Windows 10 mobile | Version 4.3 and above |



LPI® SST150B Module

Primary and Secondary protection for surge filters. Refer to page 5 & 6 for specification detail.

- Applicable to 32 A – 125 A surge filter, primary and secondary protection
- Applicable to secondary protection for 200 A surge filters and above

LPI® Spark Gap

Primary protection for 200 A surge filters. Refer to page 9 for specification detail.

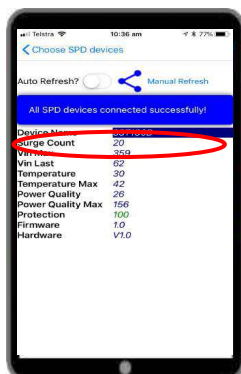


LPI® Neutral / Earth Protection for Surge Filters

Refer to page 11 for specification detail.

LPI® Alarm Interface Module (AIMCB)

Refer to page 12 for specification detail.



Surge Counter

The LPI Bluetooth range of SPD modules removes the need for a hardwired surge counter to be included with surge filters. As highlighted in the attached image a surge count is given via Bluetooth connectivity for each module. For three phase applications, this information assists in identifying problem issues where one phase maybe carrying more current than other phases.

TECHNICAL DATA SHEET

Summary of Specification Detail for Surge Filters

| Surge Filter Type | Enclosure Dimensions mm (Unpacked: W x H x D) | Weight kg (Unpacked) |
|-------------------|--|----------------------|
| SF132 | 300 x 300 x 150 | 5 |
| SF140 | 300 x 300 x 150 | 6 |
| SF163 | 300 x 300 x 150 | 6 |
| SF1125 | 300 x 300 x 150 | 7 |
| SF332 | 400 x 400 x 150 | 10 |
| SF340 | 400 x 400 x 150 | 10 |
| SF363 | 400 x 400 x 150 | 10 |
| SF3125 | 400 x 400 x 150 | 11 |
| SF3200 | 500 x 600 x 200 | 40 |
| SF3315 | 600 x 700 x 200 | 64 |
| SF3400 | 600 x 700 x 200 | 64 |
| SF3630 | 600 x 800 x 200 | 95 |
| SF3800 | 1200 x 800 x 350 | 153 |
| SF31000 | 1200 x 800 x 350 | 165 |
| SF31250 | 1200 x 800 x 350 | 165 |
| SF31500 | 1200 x 800 x 350 | 165 |
| SF31750 | 1200 x 800 x 350 | 175 |

LPI® Bluetooth Range of Surge Filters

Single Phase Surge Filters

| Surge Filter Type: | Nominal Operating Voltage U_n : @ 50/60 Hz | Surge Rating (I_{max}): @ 8/20 μ s Per SST150B module primary/secondary | Nominal Discharge Current (I_n): @ 8/20 μ s | Max. Continuous Operating Voltage (U_c): | Response Time: | Power Distribution Systems: |
|--------------------|---|--|---|--|----------------|-----------------------------|
| SF1-385 | 220-240 Vac | 50 kA | 20 kA | 385 Vrms | <5 ns | TN, TT & for L-N mode |
| SF1-480 | 220-277 Vac | 50 kA | 20 kA | 480 Vrms | <5 ns | TT & TN |

3 Phase Surge Filters (32 A – 125 A)

| | | | | | | |
|---------|-------------|-------|-------|----------|-------|-----------------------|
| SF3-385 | 220-240 Vac | 50 kA | 20 kA | 385 Vrms | <5 ns | TN, TT & for L-N mode |
| SF3-480 | 220-277 Vac | 50 kA | 20 kA | 480 Vrms | <5 ns | TT & TN |

3 Phase Surge Filters (200 A – 1750 A)

| Surge Filter Type: | Nominal Operating Voltage U_n : @ 50/60 Hz | Primary Surge Rating (I_{max}): @ 8/20 μ s | Secondary Surge Rating (I_{max}): @ 8/20 μ s | Nominal Discharge Current (I_n): @ 8/20 μ s | Max. Continuous Operating Voltage (U_c): | Response Time: | Power Distribution Systems: |
|--------------------|---|---|--|---|--|----------------|-----------------------------|
| SF3-385 | 220-240 Vac | 135 kA | 50 kA | 20 kA | 385 Vrms | <5 ns | TN, TT & for L-N mode |
| SF3-480 | 220-277 Vac | 135 kA | 50 kA | 20 kA | 480 Vrms | <5 ns | TT & TN |

TECHNICAL DATA SHEET

Surge Filter Part Number Key

| Product Type | Phases | Load Current (A) | MCOV (V) | Primary Protection (8/20 μ s unless specified) | Secondary Protection (8/20 μ s) | Alarm Module |
|--------------|--------|------------------|----------|--|-------------------------------------|--------------|
| T | UU | VVVV | WWW | XXX | YYY | Z |
| SF | 1 | 32 | 385 | 100 kA | 50 kA | AIMCB |
| | 3 | 40 | 480 | 150 kA | 100 kA | |
| | | 63 | | | | |
| | | 125 | | | | |
| | | 200 | | ≥ 200 A: 135 kA | | |
| | | 315 | | | | |
| | | 400 | | ≥ 800 A: 110 kA (10/350 μ s) | | |
| | | 630 | | | | |
| | | 800 | | | | |
| | | 1000 | | | | |
| | | 1250 | | | | |
| | | 1500 | | | | |
| | | 1750 | | | | |

Surge Filter Ordering Code:

Product Order Code: T-UU-VVVV-WWW-XXX-YYY-Z

Refer to above part number key.

1. First select product type which for surge filter = SF.
2. Select number of phases.
3. Select load current.
4. Select operating voltage.
5. Select primary protection. Note: for surge filters 200 A and above primary protection is 135 kA.
6. Select secondary protection.
7. Include alarm module.

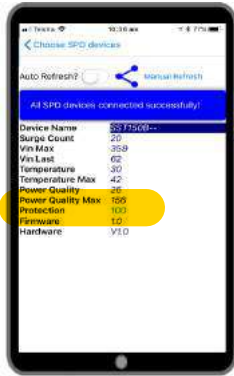
*Example product code for single phase filter = SF132-385-100+50-AIMCB**Example product code for three phase filter = SF3125-385-150+50-AIMCB**Example product code for three phase filter 200 A and above = SF3630-480-135-50-AIMCB**Example product code for three phase filter 800 A and above = SF3800-480-110-50-AIMCB*Note: All filters are fitted with 100 kA 10/350 μ s or 200 kA 8/20 μ s neutral earth protection.**All filters are supplied with cable ties securing SST150B modules for transport purposes.****Remove all cable ties when installing.**

TECHNICAL DATA SHEET

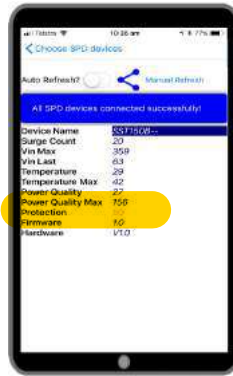
Installation & Maintenance for Surge Filters

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

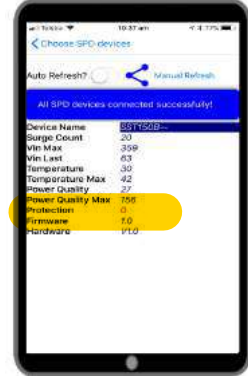
The power *must* be disconnected. Ensure no dangerous neutral to earth voltages exist prior to commencing installation work.



Operational



Replace as protection is reduced

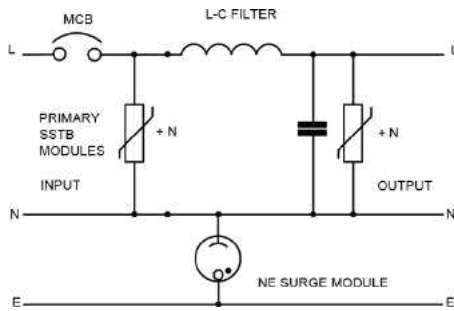


Replace as no protection is left

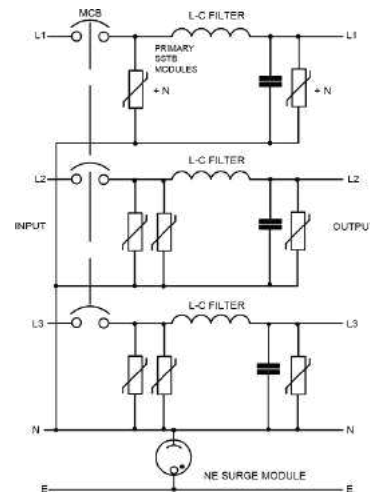
1. The surge filter should be installed as close as practical to the power distribution panel. Filters rated at 315 A and above are fitted with two mounting rails to assist with mounting the unit to the wall.
2. The input and output power cables that connect to the surge filter must have a current rating at least equal to that of the unit being installed.
3. All cables are routed through the bottom of the cabinet. Suitable cable glands should be fitted to the gland plates. All connection points are clearly labelled on the backplane.
4. Connect the input and output power lines as illustrated in figure 4 and figure 5. Input cables are considered "dirty" and must be physically separate by at least 300 mm from the "clean" output cables. This will prevent any over voltage carried by the incoming cables from being induced onto the outgoing or "clean" cables.
5. The earthing impedance of the electrical system should be less than 10 Ω , with 5 Ω recommended.
6. Connect the earth terminal on the surge filter unit to the nearest electrical main earth using the shortest possible route. Earthing cable should be a minimum of 16 mm² with 25 mm² recommended.
7. All connections must be rechecked to confirm that they are securely connected.
8. 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.

TECHNICAL DATA SHEET

- 32 A, 40 A and 63 A with MCCB built in
- 125 A and above no MCCB



Schematic of 1 Ø surge filter



Schematic of 3 Ø surge filter

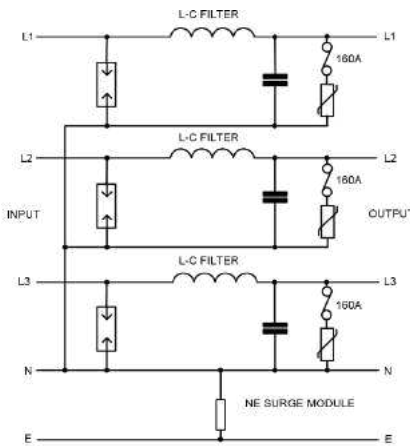


Figure 4

Schematic of 3 Ø surge filter (400 A and below, no 160 A fuse on filters below 125A)

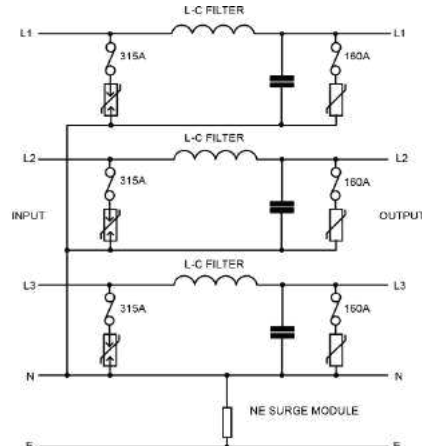


Figure 5

Schematic of 3 Ø surge filter (above 400 A)

Maintenance

1. Use LPI Bluetooth connectivity to check the status of all modules.
2. **Do not** perform maintenance work until power to the surge filter has been disconnected.
3. 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.

All filters are supplied with cable ties securing SST150B modules for transport purposes only. Remove all cable ties when installing.

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GENERIC SPECIFICATIONS

Generic Specification for Bluetooth Enable Surge Protection Device (SPD)

1. General

- 1.1 Electronic equipment is highly susceptible to damage from lightning and transient pulses which are induced via the powerlines through direct and indirect lightning events.
- 1.2 All surge protection components including Surge Protection Device, Neutral - Earth Protector and Alarm Interface Module (AIM) shall be Bluetooth enabled for connectivity via a Bluetooth app using smart phones or tablets.
- 1.3 The Bluetooth app shall be suitable for the following operating platforms: Windows, iOS and Android.
- 1.4 Each individual surge element shall provide the following data via a Bluetooth app:
- Protection Status
 - Surge Count
 - Temperature (Current & Max)
 - Voltage (Current & Max)
 - Power Quality Reading (Current & Max)

2. Surge Protection Device

- 2.1 The surge protection device shall be Bluetooth enabled and provide status indication via a multicoloured LED display.
- 2.2 The surge protection device shall have Bluetooth connectivity as outlined under section 1 titled "General".
- 2.3 The surge protection device shall be configured for Ph-N protection applications for single or multiple phases.
- 2.4 The surge protection device shall be designed for mounting on standard 35 mm DIN rail.

GENERIC SPECIFICATIONS

- 2.5** The surge protection device shall be designed to meet the requirements of IEC 61643-11 & UL 1449 Edition 4.
- 2.6** The surge protection device shall be a MOV type with a surge rating of 50 kA (I_{max}): @ 8/20 μ s.
- 2.7** The surge protection device shall have a surge withstand capability complying with ANSI C62.41 Cat A, Cat B, Cat C, AS/NZS 1768-2007 Cat A, Cat B, Cat C
The surge protection device shall be configured with a hardwired base and pluggable module.

3. Neutral- Earth Protector

- 3.1** The neutral – earth protector shall be Bluetooth enabled and provide status indication via a multicoloured LED display.
- 3.2** The neutral – earth protectors shall have Bluetooth connectivity as outlined under the section 1 titled “General”.
- 3.3** The neutral – earth protector shall be designed for use at main and sub distribution boards between neutral and earth conductors only.
- 3.4** The neutral – earth protector shall be designed for mounting on standard 35 mm DIN rail.
- 3.5** The neutral – earth protector shall be designed to meet the requirements of IEC 61643 & EN 61643.
- 3.6** The neutral – earth protector shall utilize encapsulated gas tube technology with a surge rating of 15 kA (I_{imp}): @ 10/350 μ s.
- 3.7** The neutral – earth protector shall be configured with a hardwired base and pluggable module.

→

GENERIC SPECIFICATIONS

4. Alarm Interface Module

- 4.1 The alarm interface module shall provide status indication via a multicoloured LED display and via Bluetooth connectivity.
- 4.2 The alarm interface module is designed for use in conjunction with Bluetooth enabled surge protection devices (section 2) and neutral – earth protector (section 3).
- 4.3 The alarm interface module shall provide changeover volt free contact output.
- 4.4 The alarm interface module shall be designed for mounting on standard 35 mm DIN rail.
- 4.5 The alarm interface module shall be designed to connect to a maximum of 19 Bluetooth enable surge protection devices.