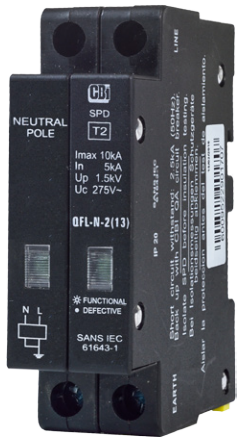
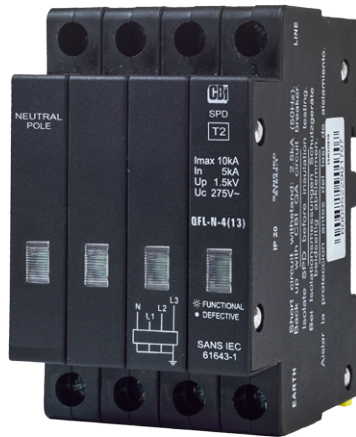


## QKL / QFL Surge Arresters

The QKL and QFL range of rail mounted surge protection devices are 13 mm in width per pole and Class II devices. They are fitted with an LED indication showing the SPD's condition: while ON, the SPD is functional; if OFF and the mains power is still available, the SPD is no longer functional and should be replaced. The device is a voltage limiting / clamping type with MOV.



**QFL**  
Dual Mount



**QFL**  
Dual Mount



**QKL**  
DIN Rail



**QKL**  
DIN Rail

### Features

- SANS 61643-1
- Compact size (13 mm per pole)
- Clip-in on both DIN and CBI Mini Rail
- DIN mount in grey with 45 mm front Escutcheon
- Dual (DIN & CBI mini rail) mount in black with 57 mm front escutcheon
- LED indication of the SPD's condition – while ON, the SPD is functional, if OFF and the mains power is still available, then the SPD is no longer functional and should be replaced
- Thermal disconnect device (prevents potential thermal runaway problems)
- One port SPD (no series impedance)
- Voltage limiting / clamping-type SPD (MOV)
- IP 20 rating

### Applications

- For surge protection on incoming power supply in lightning protection zones OB to 1 or 1 to 2 in compliance with SANS 10142-1 [The Wiring of Premises]
- For maximum efficiency, ensure that the installation is earthed in accordance with SANS IEC 61312

### Approvals

**SANS 61643-1**

### Technical Data

#### What surge is

A surge is a very short burst of high energy. Surges often occur on mains supplies and telecommunication cables and may cause electrical equipment to malfunction or be damaged.

#### Causes of a surge

Surges are caused by lightning and by switching operations on the power supply system.

The most dangerous surges are those caused by direct lightning strikes to a building. Surges due to network switching and adjacent lightning strikes are usually less dangerous, but occur more frequently.

## QKL / QFL Surge Arresters

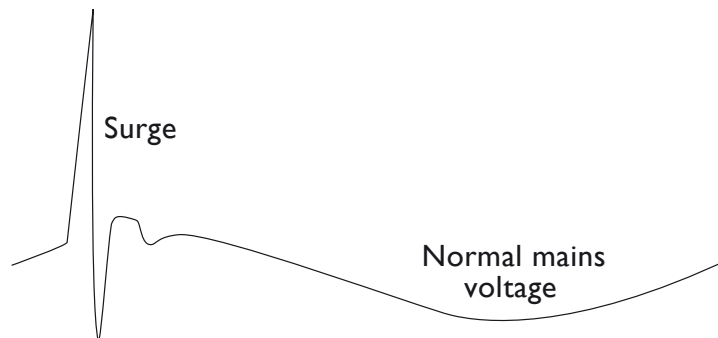
Lightning can cause severe damage to a building, by injecting a very high current into the building's wiring. Direct strikes to incoming power or telecommunication lines close to the building have the same effect as do strikes to any nearby object such as trees, poles or other buildings...

Surges from nearby strikes are less dangerous than those from direct strikes, but are far more common. Power system switching operations may be switching equipment in sub-stations, industrial machinery (e.g. motor drives or air conditioners) or switch-mode power supplies (e.g. PC power supplies).

Static electricity can also be a hazard.

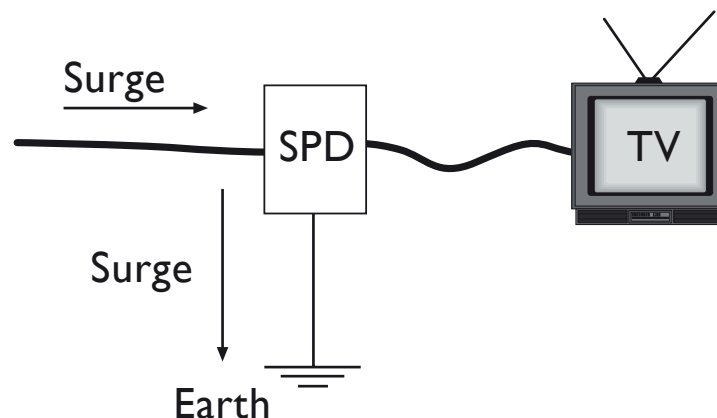
### Why surge protective devices (SPDs) is needed

A typical measured surge is shown below. Surges can damage electrical equipment because their amplitude can easily exceed the insulation level. Surges of up to many thousand volts are common. Direct lightning strikes can also inject large currents (of up to 200 kA) into an electrical system. SPDs protect equipment from these surges and hence to save on repair or replacement costs and downtime.



### What SPDs are

SPDs protect equipment by limiting the surge voltage to which the equipment is exposed..At the same time, they divert dangerous surge currents, e.g. those due to direct lightning strikes, to earth and away from sensitive equipment. In simple terms, an SPD may be seen as a switch between mains and earth. Normally, the switch is open and the SPD does not affect the operation of the equipment in any way. Only when a sufficiently high surge appears across its terminals does the switch close and divert the surge away from the equipment.



### Lightning protection zones (LPZs)

An electric system is broken up into lightning protection zones (LPZs). These are defined as::

- LPZ 0A – items in zone are subject to direct lightning strikes;
- LPZ 0B – items not subject to direct lightning strikes;
- LPZ 1 – items not subject to direct lightning strikes, and voltage and current surges are attenuated (reduced in magnitude); and
- LPZ 2 – items not subject to direct lightning strikes, and voltage and current surges are further attenuated.

## QKL / QFL Surge Arresters

### Types and application of SPDs

There are two main types of SPDs: current-diverting SPDs (Class I) and voltage clamping SPDs (Class II and III):

- Class I SPDs are able to divert large surge currents and are useful when direct lightning strikes are expected, and
- Class II SPDs are able to survive lower amplitude surges, but are sufficient in cases where direct lightning strikes are not expected.

SPDs are installed at LPZ boundaries as follows:

- Between 0A and I, a Class I SPD is needed
- Between 0B and I, a Class II SPD is needed
- Between I and 2, a Class III SPD is needed

CBI surge protection devices are used on incoming power supply in lightning protection zones OB to I or I to 2 in compliance with SANS 10142-1. It is recommended for maximum efficiency that the installation is earthed in accordance with SANS / IEC 61312.

**Class II SPDs are only to be used only where items are not subjected to direct lightning strikes and the voltage / current surges are attenuated (reduced in magnitude)**

Product Type	QFL	QKL
<b>Maximum Continuous Operating Voltage (<math>U_c</math>)</b>	275 V AC (RMS)	275 V AC (RMS)
<b>Voltage Protection level (Peak) (<math>U_p</math>)</b>	1.5 kV	1.5 kV
<b>Nominal Discharge Current (<math>I_{n0}</math>) (<math>I_n</math>)</b>	5 kA (8/20 $\mu$ s)	20 kA (8/20 $\mu$ s)
<b>Maximum Discharge Current (<math>I_{max}</math>)</b>	10 kA (8/20 $\mu$ s)	40 kA (8/20 $\mu$ s)
<b>Short Circuit Withstand*</b>	2.5 kA (50 Hz)	5 kA (50 Hz)
<b>Lightning Protection Zone</b>	OB to 1 or 1 to 2	OB to 1 or 1 to 2
<b>SPD Class</b>	Class II	Class II

**\*Recommend backed up by a suitable short circuit protection device (SCPD)**

- \* For prospective short circuit currents up to 2.5 kA Use any QA circuit breaker
- \* For prospective short circuit currents up to 5 kA Use any QF circuit breaker
- \* For prospective short circuit currents above 5 kA Contact CBI-electric

Product Type	QFL / QKL
<b>Operating Temperature Range</b>	-40 °C to +85 °C
<b>Mounting Options</b>	Dual mounting (DIN & Mini), DIN Rail
<b>Weight</b>	142 g per pole (unpacked)
<b>Humidity</b>	35 to 85% relative
<b>Altitude</b>	Certification tests done at altitude $\approx$ 2000 metres. Will operate at higher altitudes.
<b>Flammability</b>	I3 - Ignition does not persist at 850 °C after glow wire is withdrawn with an oxygen index of $\geq$ 28
<b>Toxicity</b>	F1 - Smoke index of $\leq$ 20 which determines the fume class
<b>Pollution Degree</b>	PD2 - Normally only non-conductive pollution occurs. Temporary conductivity caused by condensation is to be expected.

## QKL / QFL Surge Arresters

### Ordering Information

Clip-in Dual Mounted Surge Protection Devices I <sub>max</sub> 10 kA (8 / 20 μs) Surge Protection Devices <sup>1</sup> : 275 V Mini Rail (57 mm Escutcheon) - Class II				
Product	Description	Width	Std. Pack	Order No.
<b>QFL-1(13)</b>	1 pole 275 V, with indication	13 mm	12	QFLM0001
<b>QFLN-2(13)</b>	1 pole and neutral 275 V, with indication	26 mm	6	QFLM0002
<b>QFL-3(13)</b>	3 pole 275 V, with indication	39 mm	4	QFLM0003
<b>QFLN-4(13)</b>	3 pole and neutral 275 V, with indication	52 mm	3	QFLM0004

I <sub>max</sub> 40 kA (8 / 20 μs) Surge Protection Devices <sup>2</sup> : 275 V Mini Rail (57 mm Escutcheon) - Class II				
Product	Description	Width	Std. Pack	Order No.
<b>QKL-1(13)</b>	1 pole 275 V, with indication	13 mm	12	QKLM0001
<b>QKLN-2(13)</b>	1 pole and neutral 275 V, with indication	26 mm	6	QKLM0002
<b>QKL-3(13)</b>	3 pole 275 V, with indication	39 mm	4	QKLM0003
<b>QKLN-4(13)</b>	3 pole and neutral 275 V, with indication	52 mm	3	QKLM0004

I <sub>max</sub> 10 kA (8 / 20 μs) Surge Protection Devices <sup>1</sup> : 275 V DIN Rail (45 mm Escutcheon) - Class II				
Product	Description	Width	Std. Pack	Order No.
<b>QFL-1(13)D</b>	1 pole 275 V, with indication	13 mm	12	QFLD0001
<b>QFLN-2(13)D</b>	1 pole and neutral 275 V, with indication	26 mm	6	QFLD0002
<b>QFL-3(13)D</b>	3 pole 275 V, with indication	39 mm	4	QFLD0003
<b>QFLN-4(13)D</b>	3 pole and neutral 275 V, with indication	52 mm	3	QFLD0004

I <sub>max</sub> 40 kA (8 / 20 μs) Surge Protection Devices <sup>2</sup> : 275 V DIN Rail (45 mm Escutcheon) - Class II				
Product	Description	Width	Std. Pack	Order No.
<b>QKL-1(13)D</b>	1 pole 275 V, with indication	13 mm	12	QKLD0001
<b>QKLN-2(13)D</b>	1 pole and neutral 275 V, with indication	26 mm	6	QKLD0002
<b>QKL-3(13)D</b>	3 pole 275 V, with indication	39 mm	4	QKLD0003
<b>QKLN-4(13)D</b>	3 pole and neutral 275 V, with indication	52 mm	3	QKLD0004

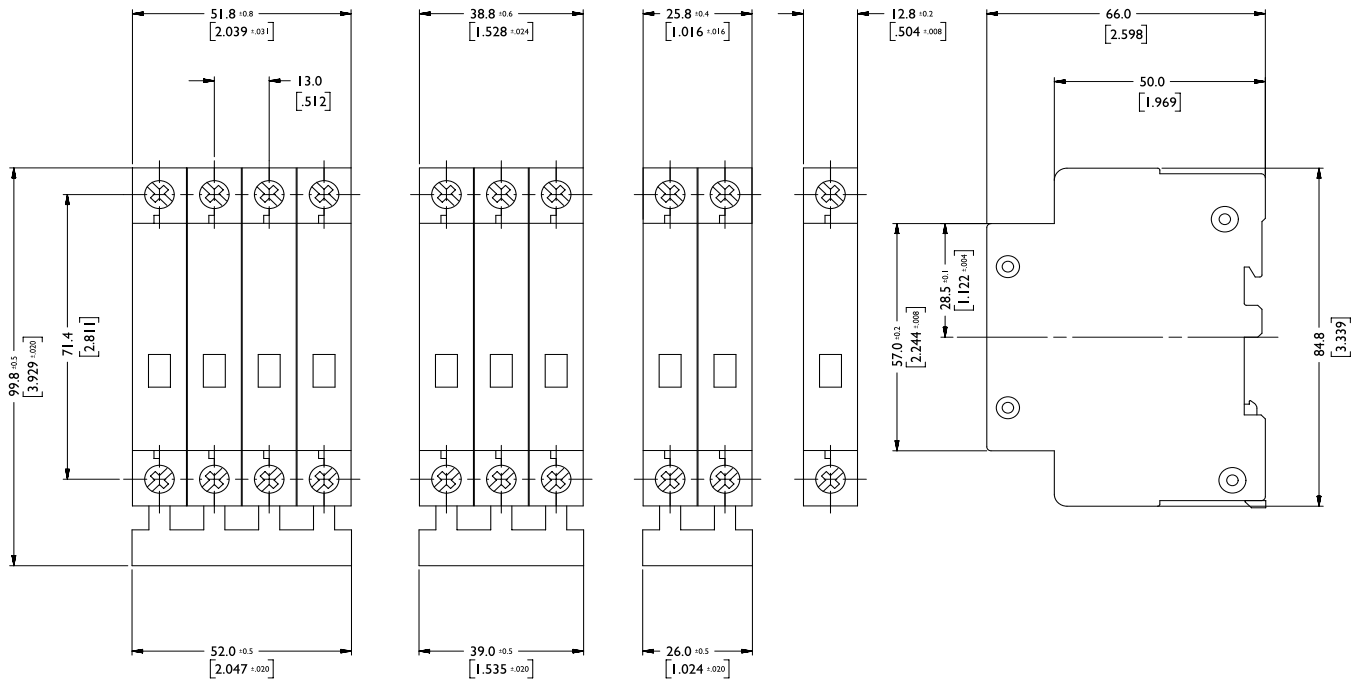
I <sub>max</sub> 10 kA (8 / 20 μs) Surge Protection Devices <sup>1</sup> : 130 V Dual Mounted - Class II				
Product	Description	Width	Std. Pack	Order No.
<b>QFL-1(13)</b>	1 pole 130V, 5 kA with indication Mini Rail (57 escutcheon)	13 mm	12	QFLM1001
<b>QFL-1(13)D</b>	1 pole 130V, 5 kA with indication DIN rail (45 escutcheon)	13 mm	12	QFLD1001

1. Required to be backed up by a QA MCB
2. Required to be backed up by a QF MCB

# QKL / QFL Surge Arresters

Dimensional Drawings: Black, 57 mm Front Escutcheon

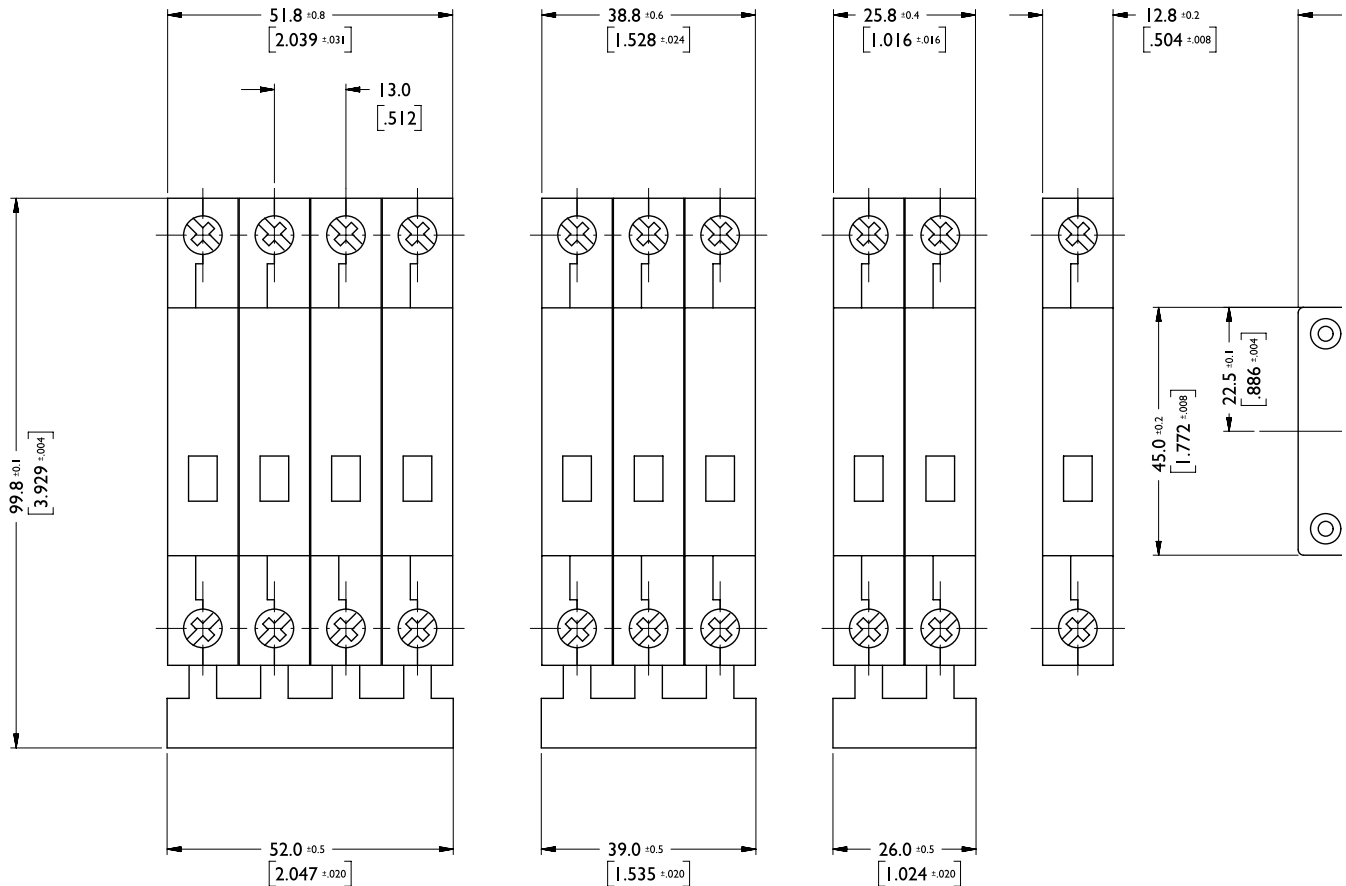
## QFLM SPD & QKLM SPD (DUAL MOUNTING) OUTLINE



TOLERANCE +0.4 UNLESS OTHERWISE SPECIFIED  
(DIMENSION IN BRACKETS ARE IN INCH)

## QKL / QFL Surge Arresters

### Dimensional Drawings: Grey, 45 mm Front Escutcheon



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