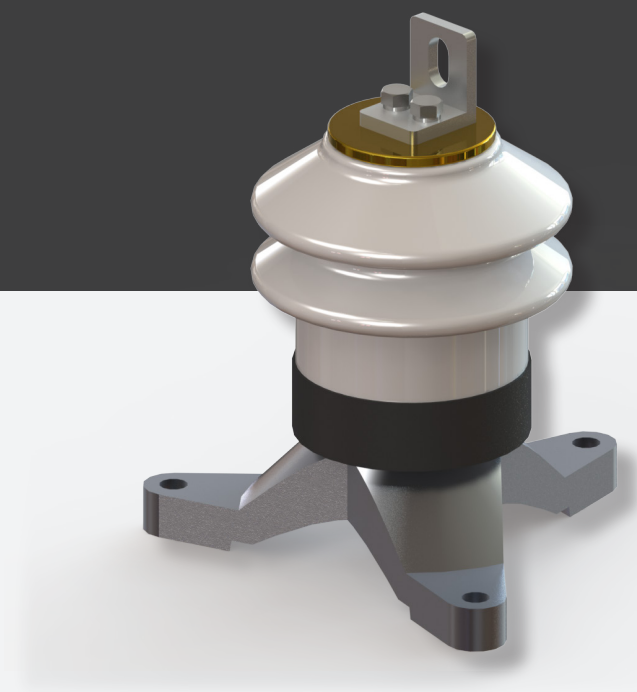
SVLs

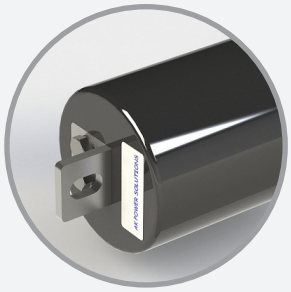
Sheath Voltage Limiters
1.5kV to 9kV



SVL's provide valuable protection to expensive cable installations. They are highly reliable and effective at managing cable sheath voltage rises and the associated power flows that can result under fault conditions.

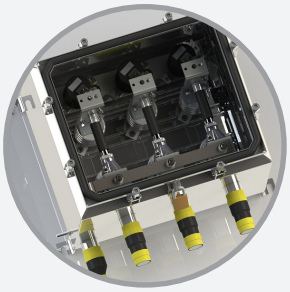
Wide voltage rating

The range includes 1.5kV, 3.0kV, 4.5 kV, 6.0kV, 7.5kV and 9.0kV with other voltages on request.



Indoor or outdoor

Various mounting arrangements available, including pedestal, in line (indoor) and tripod base (outdoor).



Link box application

Primarily used in Link Boxes as a low cost method for safeguarding cable systems.

Proven local design and build

Insulect SVLs have been used on major cable projects up to 800kV in Australia and internationally.

Selection Guide

Generally the following must be considered:

- SVL Rated voltage must be equal to or greater than the induced sheath voltage caused by the maximum system fault current (i.e. The SVL should not conduct during normal fault conditions).
- From the cable manufacturer, obtain cable data to determine the maximum voltage withstand for an 8/20 and 4/10 microsecond lightning or switching induced voltage.
- From the SVL data characteristics table, check that the SVL selected has residual voltages less than the rating of the sheath (i.e. the SVL's main function is to protect the sheath under these conditions).

65V is generally the maximum allowable voltage due to normal load currents. Short circuit and switching currents will cause much higher voltages (several kV).

These induced voltages must be calculated by the client's engineers before an SVL can be selected.

Note that all bonding cables used for earthing the sheath must also be able to withstand these voltages.

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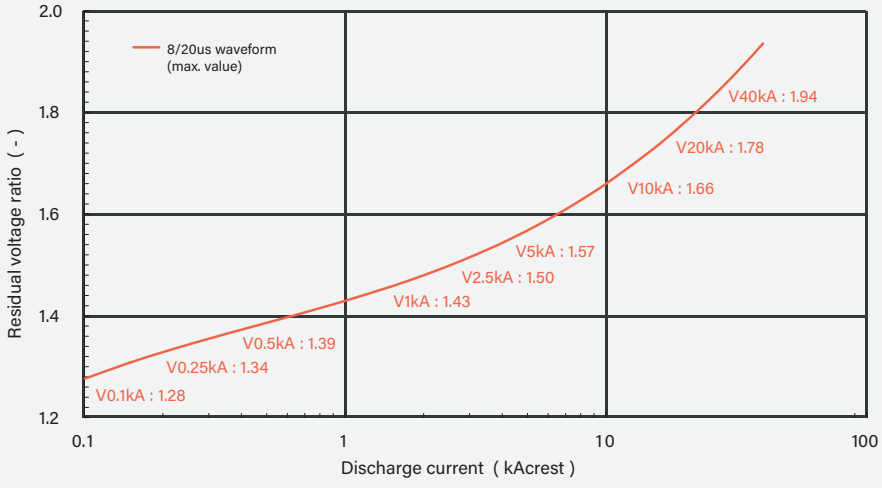
Technical Specifications

SVL Type		TZS1.5	TZS3.0	TZS4.5	TZS6.0	TZS7.5	TZS9.0
Rated Voltage	kVrms	1.5	3.0	4.5	6.0	7.5	9.0
Maximum Continuous Operating Voltage	kVrms	1.3	2.5	3.8	5.1	6.4	7.7
Rated 8/20µs current	kA	20	20	20	20	20	20
20kA 8/20 20 shot duty cycle with power frequency voltage applied 1s/shot	kVrms	1.8	3.6	5.4	7.2	9.0	10.8
High current 4/10µs withstand	kA	100	100	100	100	100	100
Low current rectangular 2000µs duration withstand (20) shot	A	1000	1000	1000	1000	1000	1000
Energy absorption (on each of 20 shots)	kJ	5	10	15	20	25	30
Energy absorption on 2 shots before cooling	kJ	6.5	13	20	26	33	40
Maximum 8/20µs residual voltage at: 1.5kA 3kA 5kA 10kA 20kA 40kA 100kA (4/10µs)	 kV kV kV kV kV kV kV	 3.6 3.7 3.9 4.1 4.4 4.9 6.0	 7.1 7.4 7.7 8.2 8.8 9.7 12.0	 10.5 11.0 11.5 11.8 13.2 14.5 18.0	 14.1 14.7 15.4 16.3 17.6 19.3 24.0	 17.6 18.4 19.2 20.4 22.0 24.2 30.0	 21.1 22.1 23.0 24.5 6.4 29.0 36.0
Residual at 15kA 1µs current rise time	kV	4.7	9.3	14.0	18.6	23.3	28.0
Resistance at 2500Vdc	Ω	N/A	N/A	$>10^7$	$>10^7$	$>10^8$	$>10^8$
Resistance at 1500Vdc	Ω	$>10^7$	$>10^7$	$>10^7$	$>10^7$	$>10^8$	$>10^8$
Temporary over-voltage (TOV) 1s withstand: from no prior load after 7kJ/kVrms of rated voltage	 kV rms kV rms	 1.9 1.8	 3.9 3.7	 5.9 5.6	 7.8 7.4	 9.8 9.3	 11.8 11.2
TOV of 5kV dc withstand time	s	∞	2	∞	∞	∞	∞
TOV of 3.5kV dc withstand time	s	∞	50	∞	∞	∞	∞
TOV of 2.5kV dc withstand time	s	2	∞	∞	∞	∞	∞
Current at 5kV dc	A	∞	3	10-4	10-5	10-5	10-5
Reference Current	mA dc	1	1	1	1	1	1
Reference Voltage (minimum)	kV dc	2.1	4.18	6.28	8.36	10.46	12.54
Mechanical robustness	-	Dropped 1.5m without internal damage					

Residual Voltage Ratio

Discharge Current Characteristics of Block



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