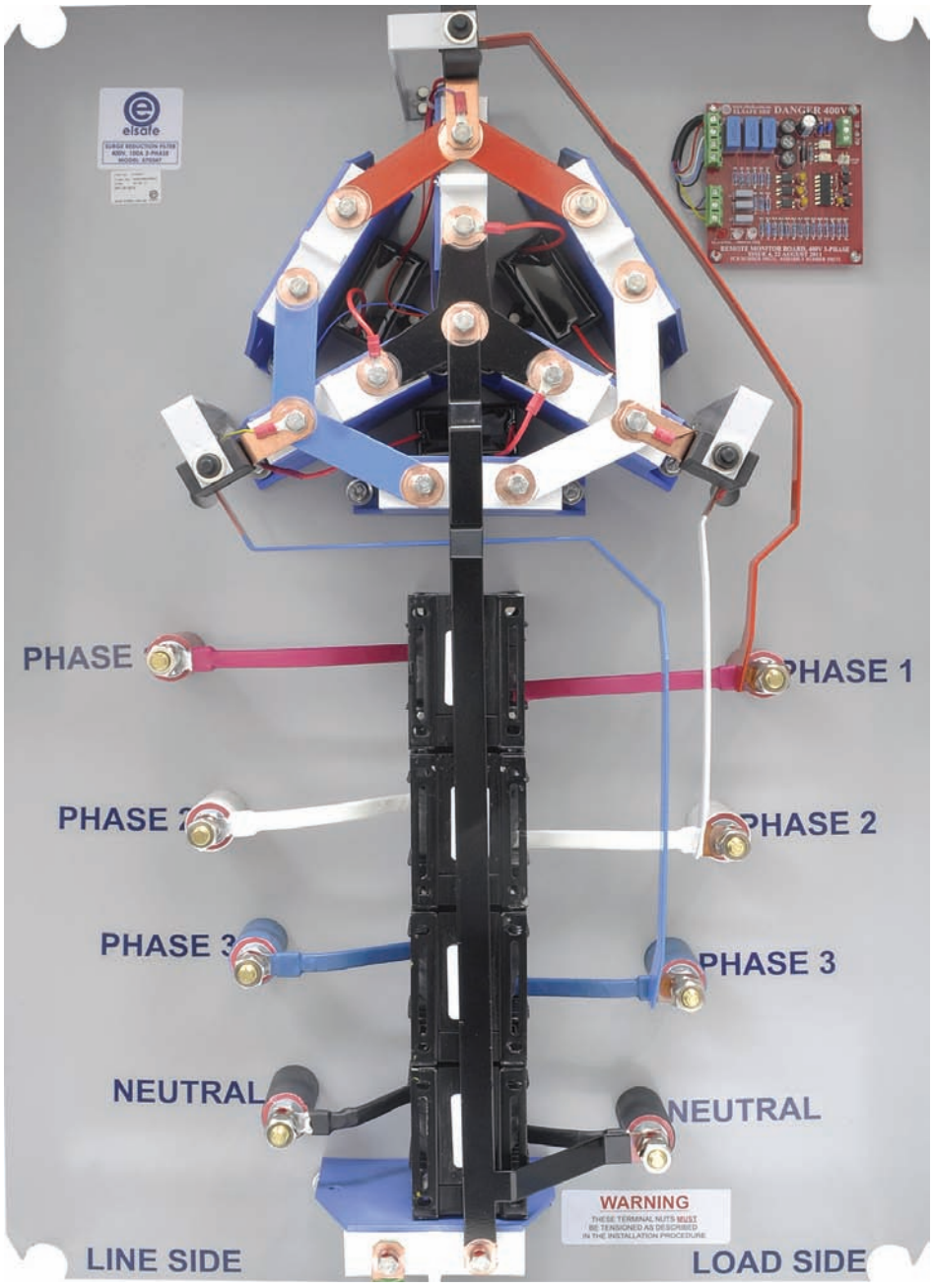
THREE-PHASE SURGE REDUCTION FILTERS 400V, 100A (SRF's)



* product may be subject to change, please check with Elsafe.

elsafe

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ELSAFE 400V, 100A THREE-PHASE SURGE REDUCTION FILTERS
MODEL NUMBERS 570347, 570447, 570547 AND 570647

Elsafe Australia has totally re-engineered and widened its range of rugged, heavy-duty Surge Reduction Filters (SRFs) intended for deployment by Heavy Industry as primary surge protection. They include a combination of high current filtering and surge protection components that have been shown to have extremely low let-through voltages during high current transient testing. Mechanically they have also been independently tested and proven to withstand high vibration environments such as railway trackside installations.

As with all other members of the range, this Surge Reduction Filter comes in 4 distinct variants defined by 2 choices of enclosure, and 2 of customer wiring termination method, all are electrically identical, they are shown in the table below.

MODEL NUMBER/ ORDER CODE	TERMINAL STYLE	ENCLOSURE MATERIAL
570347	10mm STUD	MILD STEEL
570447	10mm STUD	STAINLESS STEEL
570547	CAGE CLAMP	MILD STEEL
570647	CAGE CLAMP	STAINLESS STEEL

Surge protection is implemented on the load side by means of 100kA-rated Metal-Oxide Varistors (MOVs) connected in a “star-delta” configuration covering phase-to-phase, and phase-to-neutral, a separate MOV is connected across neutral and earth. The MOVs themselves are separated from the line side by custom-made inductors wound from solid copper. The inductor chokes are connected in series directly between the line and load terminals to ensure good continuance of supply. Capacitors between each phase and neutral form a filter to attenuate any unwanted high frequency harmonics. The three groups of phase-to-phase and phase-to-neutral MOVs are each protected by a resettable thermal cut-out whose purpose is to isolate them in the event of a transient above their rated specifications.

For the purposes of sensing the surge protection status of the SRF through telemetry, a Remote Monitor Board provides a single-pole, double-throw, voltage-free changeover contact. Connection may be made to its normally-open, normally-closed and common terminals[1] by means of a 3-pin screw connector mounted on the PCB, both the normally-open and normally-closed contacts are themselves protected from telemetry line transients by separate MOV’s that have a varistor voltage of 470Vdc±10% (300Vac maximum). The Monitor also gives a local indication of the surge protection status by means of an external blue LED indicator fitted to the SRF’s door.

The LED may be in any one of the 3 states described below

ON STEADY
The supply input is normal and the MOV array is fully connected; the changeover contact is activated (normal).

FLASHING
One or more of the thermal cut-outs has operated or one or two of the phases has been disconnected; the changeover contact is deactivated (in alarm).

OFF STEADY
A total supply failure or Remote Monitor Board fault has developed; the changeover contact is deactivated (in alarm).

[1]here “normal” indicates the state of the contacts when line power is connected to the SRF and the thermal cut-out is in its deactivated state.

Electrical Specification

RATED PHASE-TO-NEUTRAL VOLTAGE	230Vac		
RATED PHASE-TO-PHASE VOLTAGE	400Vac		
MAXIMUM APPLIED PHASE-TO-NEUTRAL VOLTAGE	300Vac		
MAXIMUM APPLIED PHASE-TO-PHASE VOLTAGE	485Vac		
MAXIMUM LOAD CURRENT	100A		
PHASE-TO-NEUTRAL MOV RATING	470V ± 10% (300Vac maximum), 100kA		
PHASE-TO-PHASE MOV RATING	780V ± 10% (485Vac maximum), 100kA		
LOAD-SIDE REMNANT VOLTAGES[2]	Phase-to-Neutral		720Vdc
	Neutral-to-Earth		744Vdc
NOMINAL AMPLITUDE FREQUENCY RESPONSE			
PHASE-TO-NEUTRAL	100% LOAD	Cut-off Frequency	7.6kHz
	10% LOAD	Cut-off Frequency	10.1kHz
PHASE-TO-PHASE	100% LOAD	Cut-off Frequency	12.5kHz
	10% LOAD	Cut-off Frequency	14.4kHz
Roll-off	≥40dB/decade in all cases		
REMOTE MONITOR CONTACT RATINGS	Maximum Applied Voltage[3]		290Vdc/200Vac (MOV-protected)
	Maximum Current Sink		100mA
CONNECTION TO CUSTOMER WIRING			
POWER	Insulator-Mounted 10mm Brass Studs (570347 and 570447)		
	Cage-Clamp Terminals Accepting up to 95mm^2 Conductors (570547 and 570647).		
SIGNALLING	3-pin screw connector block on the Remote Monitor Board		

[2]Compliance with the requirements of AS/NZS61000.4.5 (Surge Immunity) is verified by EMC Technologies Pty Ltd Report Number T110320_A. The SRF's load-side Remnant Voltages in response to standard 8/20µs, 3kA surges are detailed in that Report.

[3]Both contacts are protected by 6.5kA-rated MOV's each having a varactor voltage of 330V±10%

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Physical Specification

ENCLOSURE DETAILS	
MATERIALS	POWDER-COATED MILD STEEL (570347 and 570547)
	STAINLESS STEEL (570447 and 570647)
INGRESS PROTECTION RATING	IP66

EXTERNAL DIMENSIONS	
HEIGHT	760mm
WIDTH	600mm
DEPTH	210mm

WEIGHT	45kg

Environmental Specification

AMBIENT TEMPERATURE RANGE	$-20^{o}C \leq T_{amb} \leq +75^{o}C$
LOCAL RELATIVE HUMIDITY	≤ 90%
VIBRATION TOLERANCE[4]	20Hz sinusoidal vibration, 11g peak-to-peak

[4]Vibration Tolerance of all internal SRF connections has been tested by Vipac Engineers and Scientists Ltd as verified in Test Certificate Number 20E-11-0060-COC-463451.

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