

SINGLE-PHASE SURGE REDUCTION FILTERS 230V, 32A (SRF's)



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

Version: ISSUE 1, 180511, 18.10.2012.



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ELSAFE 230V, 32A SINGLE-PHASE SURGE REDUCTION FILTERS MODEL NUMBERS 570321, 570421, 570521 AND 570621

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
570321	10mm STUD	MILD STEEL
570421	10mm STUD	STAINLESS STEEL
570521	CAGE CLAMP	MILD STEEL
570621	CAGE CLAMP	STAINLESS STEEL

Surge protection is implemented on the load side by means of 100kA-rated Metal-Oxide Varistors (MOVs) connected in a “delta” configuration covering active-to-neutral, active-to-earth and neutral-to-earth. The MOV’s 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. A capacitor between active and neutral forms a filter to attenuate any unwanted high frequency harmonics. The active-to-neutral and active-to-earth MOVs are protected by a single 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 terminals¹ 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 MOVs 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 line-to-neutral and line-to-earth MOV’s are fully connected; the changeover contact is activated (normal).

FLASHING

The thermal cut-out has operated; the changeover contact is deactivated (in alarm).

OFF STEADY

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

¹here “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 LINE VOLTAGE	230Vac		
MAXIMUM APPLIED LINE VOLTAGE	300Vac		
MAXIMUM LOAD CURRENT	32A		
MOV RATING (ALL 3)	470Vdc \pm 10% (300Vac maximum), 100kA		
LOAD-SIDE REMNANT VOLTAGES²	Active-to-Neutral	720Vdc	
	Active-to-Earth	612Vdc	
	Neutral-to-Earth	744Vdc	
NOMINAL AMPLITUDE FREQUENCY RESPONSE	100% LOAD	Cut-off Frequency	9.9kHz
		Roll-off	40dB/decade
	10% LOAD	Cut-off Frequency	10kHz
		Roll-off	40dB/decade
REMOTE MONITOR CONTACT RATINGS	Maximum Applied Voltage ³	290Vdc/200Vac (MOV-protected)	
	Maximum Current Sink	100mAdc	
CONNECTION TO CUSTOMER WIRING	Insulator-Mounted 10mm Brass Studs (570321 and 570421)		
	Cage-Clamp Terminals Accepting up to 95mm ² Conductors (570521 and 570621)		

Physical Specification

ENCLOSURE DETAILS	
MATERIALS	POWDER-COATED MILD STEEL (570321 and 570521)
	STAINLESS STEEL (570421 and 570621)
INGRESS PROTECTION RATING	IP66

EXTERNAL DIMENSIONS	
HEIGHT	500mm
WIDTH	400mm
DEPTH	210mm

WEIGHT	25kg
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Environmental Specification

AMBIENT TEMPERATURE RANGE	$-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +75^{\circ}\text{C}$
LOCAL RELATIVE HUMIDITY	$\leq 90\%$
VIBRATION TOLERANCE⁴	20Hz sinusoidal vibration, 11g peak-to-peak

²Compliance 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 8/20 μ s, 3kA surges are detailed in that Report.

³Both contacts are protected by 6.5kA-rated MOV's each having a varactor voltage of 330Vdc \pm 10% (200Vac maximum)

⁴Vibration 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.