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Databank - **Technical Bulletin**

EMC Filter for S500 series inverters

Introduction

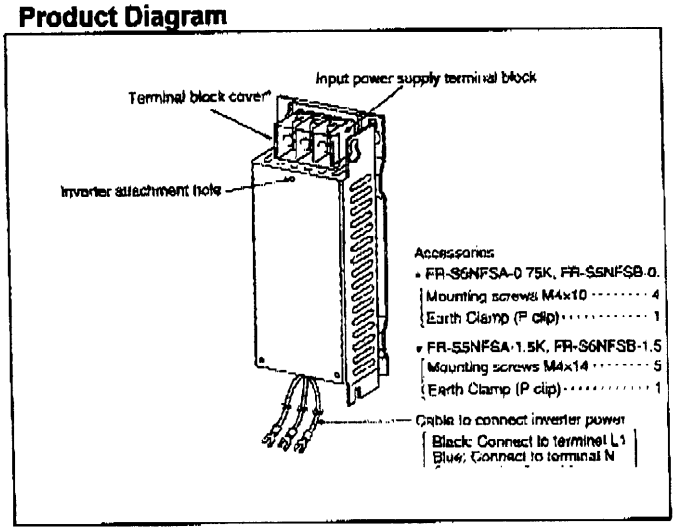
In common with all variable-speed inverters, the Mitsubishi S500 series can generate significant amounts of Electromagnetic Compatibility (EMC) disturbances. In particular, high frequency (150kHz – 30MHz) disturbances conducted into the mains supply must be controlled if products containing inverters are to comply with European EMC Directive 89/336/EEC requirements.
The usual method of controlling these disturbances is to insert a filter into the mains supply to the inverter. A filter has been developed for the S500 series for this purpose.

The filter is designed to control high frequency emissions from the inverter. It will also improve the immunity of the inverter to mains-conducted disturbances. It has no appreciable effect on the generation of immunity to mains harmonics.

S500 Filter Specifications

Filter designation		FR-S5NFSA-0.75K FOR ALL
Rated input AC voltage (V)		200 – 240V (+ 10% - 15%)
Rated input/output current (A)		14 (100% load)
Overload capacity		150% load 1min, 200% load 1s
Leakage current (mA) (500Hz)		4.5
Electric strength		AC2000V 1minute, AC2400V 5 seconds
Surge		5000V 1.2 μs peak, 50 μs (5 times)
Environmental Condition	Ambient temperature	-10 to 50 °C
	Storage temperature	-20 to 65°C
	Ambient humidity	90% RH or less (without dew condensing)
Mains conducted performance (at 14.5kHz)		Curve 'A' (industrial) with 5m output cable
		Curve 'B' (residential) with 1m output cable

Product Diagram



Accessories:
Mounting screws M4×10.....4
Earth Clamp (P clip).....1

- Terminal block must be attached when using the filter.
- Do not switch power on before connecting the inverter power connection cables for the inverter.
- The filter and inverter is hot when power is on and for a short time when power is off.

Title: EMC Filter for S500 series Inverters
Keywords: S500 series, Filters, EMC, European directives

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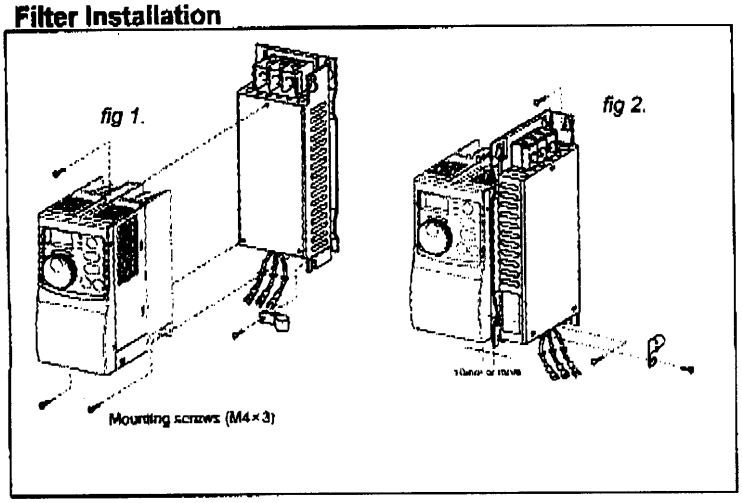
Filter Installation



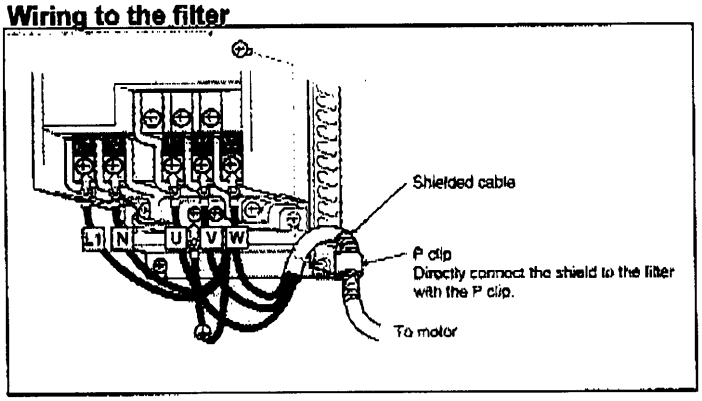
The filter can be attached using either a footprint (*fig 1.*) or a bookshelf (*fig 2.*)

(fig 1.)- Method for installation on rear panel of inverter. (Vibration: 5.9 m/s^2)

(fig.1) – Method for installation in parallel with inverter. (Vibration: 2.4m/s^2)

The filter is attached to the inverter using the M4screws provided as shown.

Wiring to the filter



Warning: Care should be taken to avoid risk of electric shock.

The mains cable is secured as shown.

The inverter-motor wiring can be a powerful noise source.
Whichever method of installation is used, use a 'P' clip to ensure stability of the mains cable.

Wiring in parallel with inverter