

RFI Filter Units for Frequency Inverters FR-A 500

Short reference for RFI filter unit type FFR-A540-8A-EF1 to 30A-EF1, FFR-A540-8A-SF2 to 180A-SF2, FFR-A540-8A-SF100 to 180A-SF100 and FN 3359/250/28 to FN 3359/1000/99

Please read the following installation notes carefully to use the filter unit to its option.



CAUTION:

The RFI filter units described in this reference sheet are designed for exclusive use in combination with Mitsubishi inverter type FR-A 500. Their function is to reduce mains conducted RFI noise to comply with the EN 55011 A / EN 55022 B (filters ≤ 180A) and EN 55011 A (filters > 180 A) domestic standards. Practical results may differ from this. Please note, that the appearance and wiring mechanics of the noise filters may differ from the figures shown in this short reference. Safe functioning as well as the grade of the radio frequency protection do not take affect of this.

For further details please refer to the Mitsubishi manual for Frequency Inverters and EMC, which contains detailed information about EMC conforming installation.

Mounting

Check the inverter type. The filter should be used only in combination with inverters described in the table below.

Filter	Frequency inverter–performance catagory [kW]		
	FR-A 540 EC	FR-A 520	FR-A 540L EC
FFR-A540-8A-EF1	0.4 k–1.5 k	—	—
FFR-A540-16A-EF1	2.2 k/3.7 k	—	—
FFR-A540-30A-EF1	5.5 k/7.5 k	—	—
FFR-A540-8A-SF2	0.4 k–1.5 k	0.4 k/0.75 k	—
FFR-A540-16A-SF2	2.2 k/3.7 k	1.5 k/2.2 k	—
FFR-A540-30A-SF2	5.5 k/7.5 k	3.7 k	—
FFR-A540-50A-SF2	11 k/15 k	5.5 k	—
FFR-A540-75A-SF2	18.5 k/22 k	7.5 k/11 k	—
FFR-A540-95A-SF2	30 k	15 k	—
FFR-A540-120A-SF2	37 k	18.5 k	—
FFR-A540-180A-SF2	45 k/55 k	22 k/30 k	—
FFR-A540-8A-SF100 ①	0.4 k–1.5 k	0.4 k/0.75 k	—
FFR-A540-16A-SF100 ①	2.2 k/3.7 k	1.5 k/2.2 k	—
FFR-A540-30A-SF100 ①	5.5 k/7.5 k	3.7 k	—
FFR-A540-50A-SF100 ①	11 k/15 k	5.5 k	—
FFR-A540-75A-SF100 ①	18.5 k/22 k	7.5 k/11 k	—
FFR-A540-95A-SF100 ①	30 k	15 k	—
FFR-A540-180A-SF100 ①	37 k–55 k	18.5 k–30 k	—
FN 3359/250/28 ②	—	37 k/45 k	75 k
FN 3359/400/99 ②	—	55 k	90 k–132 k
FN 3359/600/99 ②	—	—	160 k/220 k
FN 3359/1000/99 ②	—	—	280 k

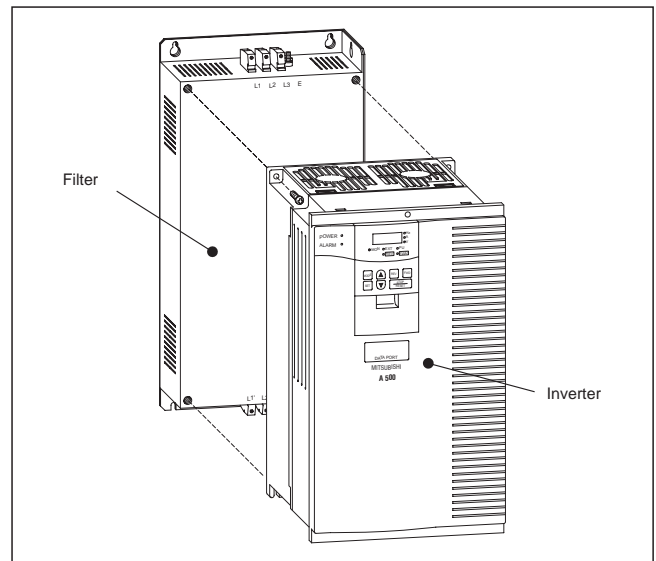
Function

The RFI units described in this short reference are designed to reduce mains conducted RFI emissions to meet the European standards EN 55011 A / EN 55022 B. Therefore the lenght of the motor cable should be within 30 m to meet class A and 10 m to meet class B. Filters greater than 75A meet class B with a motor cable of 5 m.

- ① The filters meet the standards EN 55011 A with a motor cable of 100 m and meet the standard EN 55022 B with a motor cable of 20 m.
- ② The filters meet the standards of class A with a motor cable of 100 m.

Mounting of filters type FFR-A540-□□□A

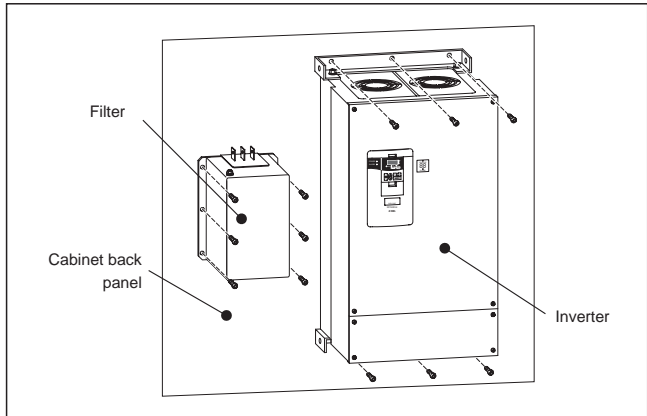
Fix the inverter to the top panel of the filter and secure it with the screws provided.



To fix the filter-inverter unit on the back of the cabinet use the mounting bolts provided with the filter. For correct filter performance the filter mounting bolts should electrically bond to the cabinet back panel wich is connected to earth. If this is not possible, the paint should be removed from the cabinet directly under the filter footprint.

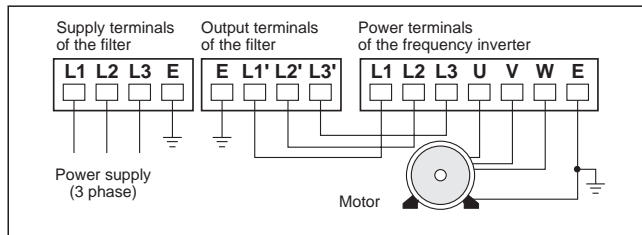
Mounting of filters type FN 3359-□□□

The filters type FN3359 and the according inverters are mounted side by side on the back of the cabinet. For correct filter performance the filter mounting bolts should electrically bond to the cabinet back panel which is connected to earth. If this is not possible, the paint should be removed from the cabinet directly under the filter footprint.



Wiring

For electrical installation follow the wiring procedure shown in the picture below. The maximum wiring length of the motor cable should be within the specified values.



All cables must be shielded and earthed at both ends in order to reduce cable radiation. Earth motor, bond to filters.

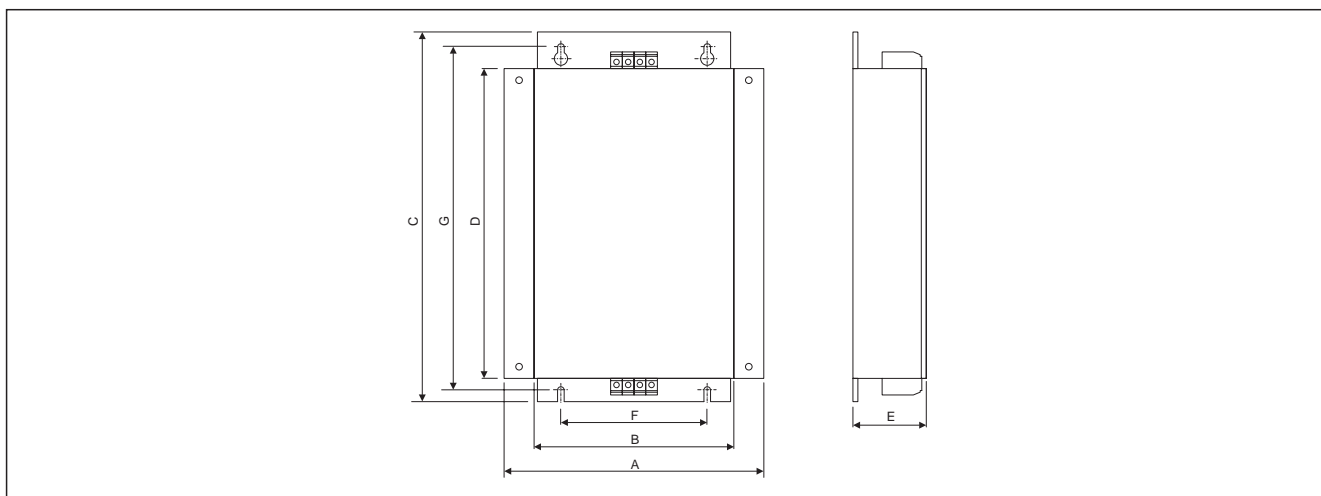
For environmental conditions and mounting position please note the instructions in the operation manual for the frequency inverter FR-A 540 (L) EC.

Specifications

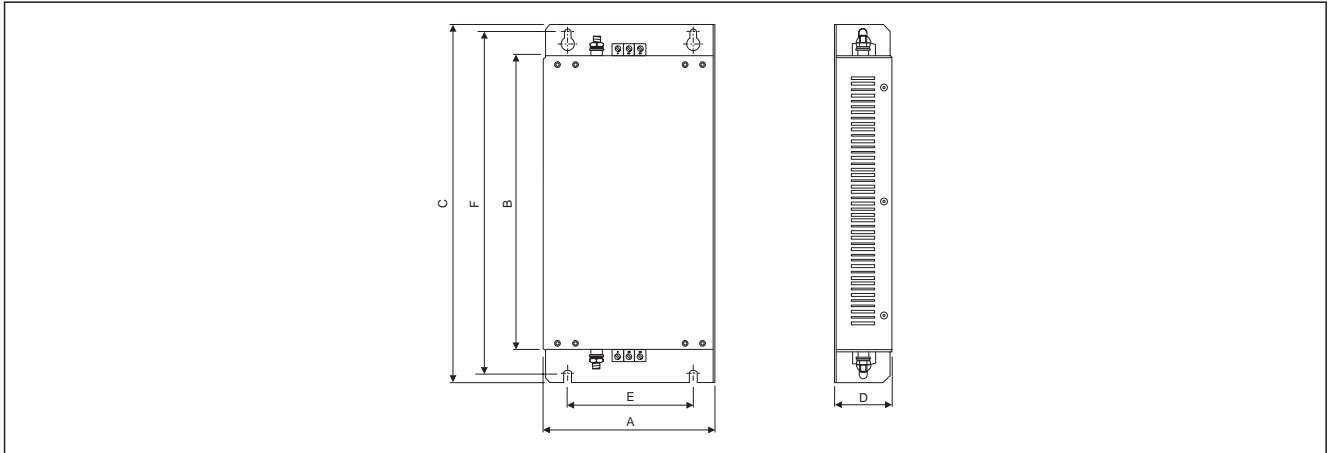
Specifications	Filter			
	FFR-A540- A-EF1	FFR-A540- A-SF2	FFR-A540- A-SF100	FN 3359
Rated voltage	max. 3~ 480 V AC	max. 3~ 480 V AC	max. 3~ 480 V AC	max. 3~ 500 V AC
Frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Rated and leakage current	see the following tables	see the following tables	see the following tables	see the following tables
Power loss	see the following tables	see the following tables	see the following tables	see the following tables
Ambient temperature range	-25~100 °C	-25~85 °C	-25~85 °C	-25~85 °C
Ambient humidity	90 %	90 %	90 %	90 %
Vibration	10~200 Hz; 1.8 G	10~200 Hz; 1.8 G	10~200 Hz; 1.8 G	10~200 Hz; 1.8 G

Dimensions

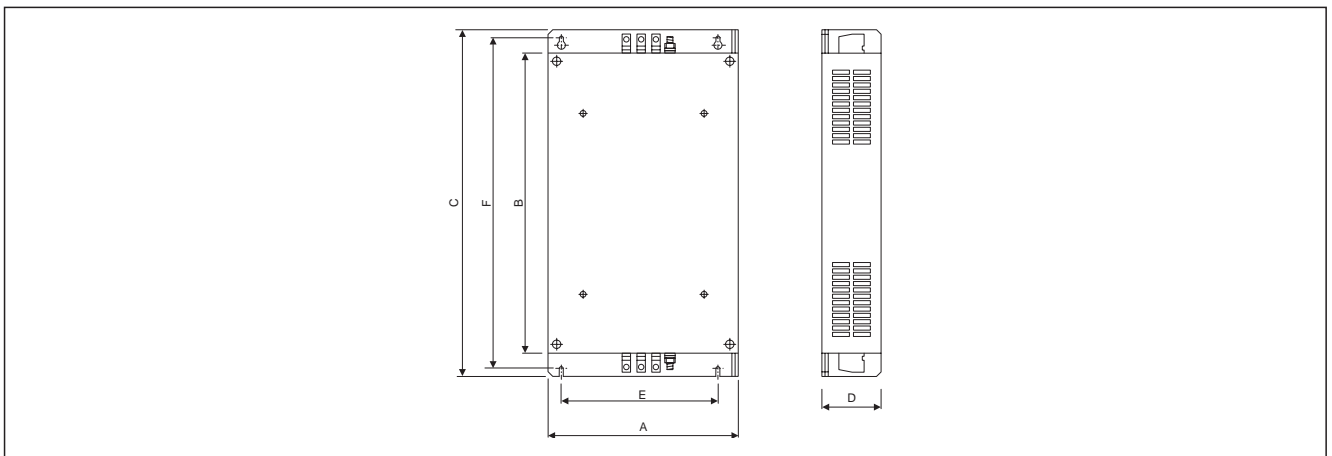
Filter type FFR-A540-8A-EF1 to FFR-A540-30A-EF1



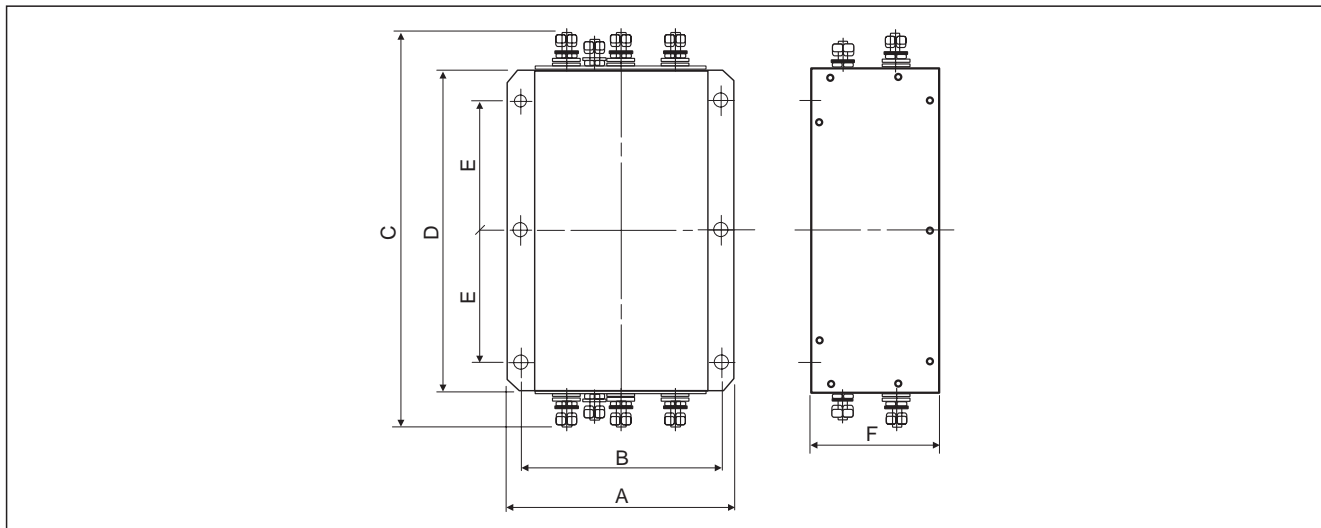
Filter type	Inverter	A	B	C	D	E	F	G	Mounting screws	Weight [kg]	Power loss [W]	Leakage current [mA]	Rated current [A]
FFR-A540-8A-EF1	FR-A540-0.4 k~1.5 k	150	100	315	265	50	70	295	4 x M5	2.2	5.5	< 30	8
FFR-A540-16A-EF1	FR-A540-2.2 k / 3.7 k	150	100	315	265	50	70	295	4 x M5	2.3	7	< 30	16
FFR-A540-30A-EF1	FR-A540-5.5 k / 7.5 k	220	170	315	265	60	125	147.5	4 x M5	4.7	10	< 30	30

Filter type FFR-A540-8A-SF2 to FFR-A540-180A-SF2 and FFR-A540-8A-SF100 to FFR-A540-180A-SF100


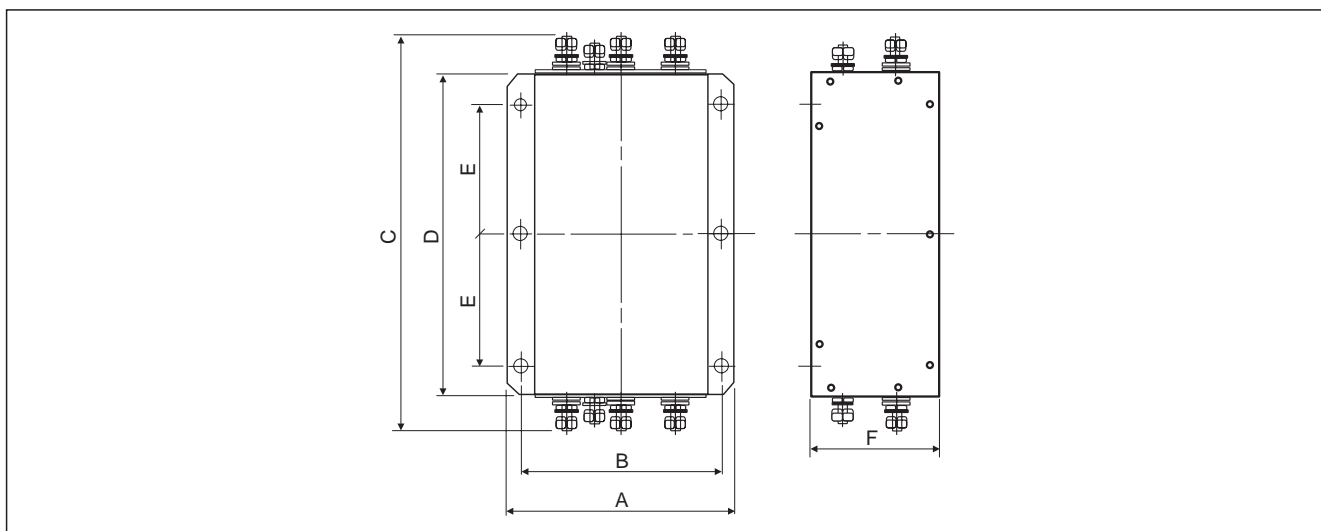
Filter type	Inverter		A	B	C	D	E	F	Mounting screws	Weight [kg]	Power loss [W]	Leakage current [mA]	Rated current [A]
	FR-A 540	FR-A 520											
FFR-A540-8A-SF2	0.4 k-1.5 k	0.4 k/0.75 k	150	260	315	50	110	300	4 x M5	1.5	5	< 30	8
FFR-A540-8A-SF100	0.4 k-1.5 k	0.4 k/0.75 k											
FFR-A540-16A-SF2	2.2 k / 3.7 k	1.5 k/2.2 k	150	260	315	50	110	300	4 x M5	1.5	8	< 30	16
FFR-A540-16A-SF100	2.2 k / 3.7 k	1.5 k/2.2 k											
FFR-A540-30A-SF2	5.5 k / 7.5 k	3.7 k	220	260	315	60	180	300	4 x M5	3	14	< 30	30
FFR-A540-30A-SF100	5.5 k / 7.5 k	3.7 k											



Filter type	Inverter		A	B	C	D	E	F	Mounting screws	Weight [kg]	Power loss [W]	Leakage current [mA]	Rated current [A]
	FR-A 540	FR-A 520											
FFR-A540-50A-SF2	11 k/15 k	5.5 k	251.5	400	460	80	210	445	4 x M8 (for FR-A 540) 4 x M5 (for FR-A 520)	3.5	25	< 30	50
FFR-A540-50A-SF100	11 k/15 k	5.5 k											
FFR-A540-75A-SF2	18.5 k/22 k	7.5 k/11 k	251.5	400	476	80	210	457	4 x M8 (for FR-A 540) 4 x M5 (for FR-A 520)	4.1	34	< 30	75
FFR-A540-75A-SF100	18.5 k/22 k	7.5 k/11 k											
FFR-A540-95A-SF2	30 k	15 k	340	550	626	90	280	607	4 x M8	6.7	36	< 30	95
FFR-A540-95A-SF100	30 k	15 k											
FFR-A540-120A-SF2	37 k	37 k	450	550	636	120	380	617	4 x M10	9.7	34	< 30	120
FFR-A540-180A-SF2	45 k/55 k	45 k/55 k											
FFR-A540-180A-SF100	37 k-55 k	18.5 k-30 k	450	550	652	120	380	633	4 x M10	10.8	62	< 30	180

Filter type FFR-A540-8A-SF2 to FFR-A540-180A-SF2 and FFR-A540-8A-SF100 to FFR-A540-180A-SF100


Filter type	Inverter		A	B	C	D	E	F	Weight [kg]	Power loss [W]	Leakage current [mA]	Rated current [A]
	FR-A 540L	FR-A 520										
FN 3359/250/28	75 k	37 k/45 k	230	180	360	300	120	125	7	38	< 6	250



Filter type	Inverter		A	B	C	D	E	F	Weight [kg]	Power loss [W]	Leakage current [mA]	Rated current [A]
	FR-A 540L	FR-A 520										
FN 3359/400/99	90 k-132 k	55 k	260	235	386	265	120	115	10.5	51	< 6	400
FN 3359/600/99	160 k/220 k	—	260	235	386	265	120	135	11	65	< 6	600
FN 3359/1000/99	280 k	—	280	255	456	265	145	170	18	84	< 6	1000

Specifications subject to change.

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