

 ABB Oy, Product Support		<b>Maintenance Instruction</b>		DOCIIMRFIS902	
		<b>10025460 B84143-A1000-S9 RFI FILTER</b>			
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## 1. General information

These instructions are meant to be followed when carrying out the annual measurements to define the condition of the RFI filter. If measured values are out of limits, then the RFI filter must be replaced.

If other required repair or maintenance tasks occur before or during the measurement, ones that have not been presented in this instruction, should the service personnel be familiar with the working methods which are needed to get the required actions done safely without harming the employee himself or the surroundings. Before starting the measurement the whole work must be planned so that the required actions are done according to the safety regulations.

### 1.1 Safety



#### **WARNING!**

It shall be ensured that only qualified persons (electricity specialists) are engaged on work such as planning, assembly, installation, operation, repair and maintenance. They must be provided with the corresponding documentation.

**Danger of electric shock.** EMC filters contain components that store an electric charge. Dangerous voltages can continue to exist at the filter terminals for longer than five minutes even after the power has been switched off.

The protective earth connections shall be the first to be made when the EMC filter is installed and the last to be disconnected. Depending on the magnitude of the leakage currents, the particular specifications for making the protective-earth connection must be observed.

Impermissible overloading of the EMC filter, such as impermissible voltages at higher frequencies that may cause resonances etc. can lead to destruction of the filter housing.

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EMC filters must be protected in the application against impermissible exceeding of the rated currents by suitable over current protective.

### 1.2 Needed tools

- True RMS multimeter, at least CAT III 1000V, E.g. FLUKE 87 III as shown in the picture 1.
- Test leads + probes, at least CAT III 1000V
- E.g. Motech 4080A, LCR meter
- E.g. AVO Megger BM223, Insulation resistance meter



Pic 1.

- Padlock
- "Do not switch-men at work" signs as shown in picture 2.

**MEN AT WORK**

Please do not connect voltages  
without permission from  
following persons:

Name/Company	Phone
_____	_____
Date: _____	

**ABB**

Pic 2.



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## 2. Measurement of EMC filter B84143-A1000-S009 characteristics

**WARNING!** After switching off the mains, always allow the RFI capacitors 5 minutes to discharge before working on the RFI filter. The voltage between each input terminal (L1, L2, L3) and earth must be measured with a multimeter (impedance at least 1 M $\Omega$ ) to ensure that the RFI filter is discharged before beginning work.

Disconnect the filter from the line side and the load side.

Customer:	
Country:	
Serial number of the filter:	
Type of the drive where filter is used:	
Drive's serial number:	

Item	Description	Measured value	Acceptable values
1.1	Measurement of capacitance @ 1 kHz; 1 V		
1.1.1	Measurement of capacitance at line side		
1.1.1.1	C L1 – L2 / $\mu$ F		4,60 ... 6,93
1.1.1.2	C L1 – L3 / $\mu$ F		4,60 ... 6,93
1.1.1.3	C L2 – L3 / $\mu$ F		4,60 ... 6,93
1.1.1.4	C L1 – Gnd / $\mu$ F		2,12 ... 3,20
1.1.1.5	C L2 – Gnd / $\mu$ F		2,12 ... 3,20
1.1.1.6	C L3 – Gnd / $\mu$ F		2,12 ... 3,20
1.1.2	Measurement of capacitance at load side		
1.1.2.1	C L1' – L2' / $\mu$ F		4,61 ... 6,94
1.1.2.2	C L1' – L3' / $\mu$ F		4,61 ... 6,94
1.1.2.3	C L2' – L3' / $\mu$ F		4,61 ... 6,94
1.1.2.4	C L1' – Gnd / $\mu$ F		2,11 ... 3,19
1.1.2.5	C L2' – Gnd / $\mu$ F		2,11 ... 3,19
1.1.2.6	C L3' – Gnd / $\mu$ F		2,11 ... 3,19



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1.2	Measurement of inductance @ 10 kHz; 0,1 mA		
1.2.1	L L1 – L1' / $\mu\text{H}$		36,4 ... 67,6
1.2.2	L L2 – L2' / $\mu\text{H}$		36,4 ... 67,6
1.2.3	L L3 – L3' / $\mu\text{H}$		36,4 ... 67,6
1.3	Measurement of insulation resistance @ 500 V dc		
1.3.1	R L1 – L2 / $\text{M}\Omega$		1,6 ... 2,2
1.3.2	R L1 – L3 / $\text{M}\Omega$		1,6 ... 2,2
1.3.3	R L2 – L3 / $\text{M}\Omega$		1,6 ... 2,2
1.3.4	R L1 – Gnd / $\text{M}\Omega$		> 10
1.3.5	R L2 – Gnd / $\text{M}\Omega$		> 10
1.3.6	R L3 – Gnd / $\text{M}\Omega$		> 10

Measured by:

Place, date and time: