Ecosine® active Harmonic Filters
Failure analysis 200A/690V 3-Wire

August 2020

SCHAFFNER
shaping electrical power
Failure analysis 200A 690V 3-Wire

1. Intended use
The ECOsine® active harmonic filter is used for active compensation of reactive power and harmonic content and for load balancing. Please ensure that no compensation systems, which are not detuned, are connected to the same grid. Otherwise interactions between Ecosine® active and these compensation systems may occur.

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DANGER
Dangerous voltage
Risk of death due to short circuits and electric shock if the active filter is opened improperly. The discharge time of the intermediate circuit after disconnecting from the mains can be more than 5 minutes. All interventions involving opening the device cover or removing or installing the connection cable may only be performed by qualified personnel.

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WARNING
High-frequency interferences
In a residential environment, high-frequency interferences could occur, which necessitate interference suppression.

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Note
Please note that there are additional manuals for some product variants. For the latest versions of these manuals go to www.schaffner.com
It particularly applies to types FN3420-100/120-400-3-GL, please observe the special EMC-Filter Manual for these types (Ecosine EMC Filters for Applications with GL)

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2. Personnel qualification
Installation of the ECOsine® active filter, inspections for proper operation, and certain troubleshooting measures may only be performed by qualified personnel. All other measures may be performed by people who have read these instructions.

Attention!
Before starting to work on the device, ensure that it is disconnected from the grid and capacitors are discharged.

3. Tool list (minimum requirements)
- Camera
- Multimeter with diode tester
- Screwdriver PH2
- AHF viewer software
4. General condition

Take a picture of the near surroundings, check the basic condition outside

☐ Near surrounding
☐ Basic condition outside

Take a picture of the label to get the device data

☐ Label
Take a picture of the front side full view without cooling system

- Front side full view

Take a picture of the inside bottom

- Inside bottom

Take a picture of the cooling system

- Cooling system
Dismantle safety guards

Attention!
Short the external current transducer with the short circuit bridges
5. Application & Installation

Check and indicate how the device is connected. Specify the type & values of the load & external fuses or forward a schematic diagram.

Load: __________________________

Load Values: _____________________

External fuses: ____________________

Specify the type and value of the used current transformer

CT Brand: _________________________

CT Value: _________________________

Mains/Load side installed: Mains [ ] Load [ ]

Specify the environmental conditions: Ambient temperature in °C & humidity. Also indicate device temperature during operation

Ambient temperature: ______ °C

Device temperature: ______ °C

Humidity: ______ %RH
Specify the exact information showed in the display. Status or error message, if it's possible

Error message: _______________________
Status message: _______________________

Parameters and even log of all affected devices are required. These can be downloaded via AHF Viewer, if possible.

Parameter File: Yes ☐ No ☐
Event Log: Yes ☐ No ☐

Any other Schaffner filters are installed in same application:
Type & Qty: _______________________
No: ☐
Any other problems detected on these other filters, same/other problems happen in the past:
__________________________________
6. Measurements on device

Check with ohmmeter the resistance between

L1 and L2 (contact bar): _____ Ω
L2 and L3 (contact bar): _____ Ω
L1 and L3 (contact bar): _____ Ω

Attention!
Open fuses F3 and F4

Check with ohmmeter the resistance between

Contact bar L1 on main switch and L1 after the contactor _____ Ω
Contact bar L2 on main switch and L1 after the contactor _____ Ω
Contact bar L3 on main switch and L1 after the contactor _____ Ω

Attention!
For testing, the precharge contactor has to be pressed
Check with diode tester

\[- \text{Multim. / C+} \rightarrow + \text{Multim. / SCH-LI} \]
\[+ \text{Multim. / C+} \rightarrow – \text{Multim. / SCH-LI} \]

\[- \text{Multim. / PH} \rightarrow + \text{Multim. / SCH-LI} \]
\[+ \text{Multim. / PH} \rightarrow – \text{Multim. / SCH-LI} \]

\[- \text{Multim. / PH} \rightarrow + \text{Multim. / SCH-RE} \]
\[+ \text{Multim. / PH} \rightarrow – \text{Multim. / SCH-RE} \]

\[- \text{Multim. / C-} \rightarrow + \text{Multim. / SCH-RE} \]
\[+ \text{Multim. / C-} \rightarrow – \text{Multim. / SCH-RE} \]

\[- \text{Multim. / MP} \rightarrow + \text{Multim. / SCH-LI} \]
\[+ \text{Multim. / MP} \rightarrow – \text{Multim. / SCH-LI} \]

\[- \text{Multim. / MP} \rightarrow + \text{Multim. / SCH-RE} \]
\[+ \text{Multim. / MP} \rightarrow – \text{Multim. / SCH-RE} \]

Enter the measured value to the table below

| 1. _______Vdc | 2. _______Vdc |
| 1. _______Vdc | 2. _______Vdc |
| 1. _______Vdc | 2. _______Vdc |
| 1. _______Vdc | 2. _______Vdc |
| 1. _______Vdc | 2. _______Vdc |

Send the pictures, all requested information, the event log and the parameter setting to Schaffner Service Center, for final analysis and define of next steps.
Service Centers

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