

Failure Analysis Checklist for Customer

Ecosine active sync



www.myecosine.com

English version

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The most current edition of these instructions (PDF format) can be obtained from your contact of the Schaffner service organization.

Other technical documentation of our products is also available in the download area of our website www.schaffner.com

Document name:
Failure Analysis Checklist for Customer FN35xx Power Module

Version history

Revision	Date	Description
01	March 2018	Initial version

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1 Introduction

1.1 Purpose

The ecosine active sync User and Installation Manual provide information for unpacking, installation and commissioning of the filter and describe mechanical and electrical installation of the filters. It contains basic information about parameters and communication as well as troubleshooting information.

The instructions are intended for use by qualified personnel. Reading and following these instructions is mandatory. Particular attention need to be given to the general safety notes and installation guidelines (cautions and warnings)! Keep these instructions available with the filter(s) at all the times.


Installation of the ecosine active sync 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.

1.2 Additional Resources

The Schaffner group does provide a number of additional resources available at schaffner.com to understand power quality in general and product in particular.

The ecosine active sync filter failure analysis instruction provides information on failure analysis for customers.

2 General Safety Notes and Installation Guidelines



Schaffner International Ltd | Nordstrasse 11
4542 Luterbach | Switzerland
P +41 32 681 66 26 | F +41 32 681 66 30

EN

Power Quality Filters

General Safety Notes and Installation Guidelines (Cautions and Warnings)

1. Important Information
 These general safety notes refer to the group of power quality filters including active and passive harmonic filter (AHF, PHF), AC line chokes and output filters. Do not attempt to install, operate, maintain or inspect power quality filters until you have read through the safety notes and installation guidelines as well as installation manual and product specification. Do not use any Schaffner product until you have a full knowledge of the equipment, safety notes and installation guidelines. The same applies to all warnings placed on the filters. Please ensure that those are not removed and their legibility is not influenced by external factors.
 The following symbols, terms and designations are used in these general safety notes and installation guidelines:

Label	Description
	Follow these instructions to avoid hazardous conditions which could cause minor or moderate injury or may cause damages to the unit.
	Follow these instructions to avoid hazardous conditions which could result in death or serious injury.
NOTICE	Indicates content to be noted by the reader.

2. General Installation Notes

- ⓘ Please read and follow the safety and application notes below.
- ⓘ Carefully inspect the shipping container and the product prior to the installation. In case of visual damage, don't install the filter and file a claim with the freight carrier involved.
- ⓘ Filters may be heavy. Follow the instructions for lifting heavy equipment defined by your company.
- ⓘ Use an appropriately sized threaded bolt for every mounting hole/slot provided by the filter flange. The strength class of the bolt must be determined by the installer, depending upon filter weight and the material of the mounting surface.
- ⓘ Connect the filter to the protective earth (PE) terminal(s).
- ⓘ Remove all line side power, then connect the phase terminal(s) and neutral terminal (if any) of the filter. The filter label may also indicate LINE (grid side terminals) and LOAD (power electronics terminals).
- ⓘ For the electrical connection of the filter terminals, apply the torques recommended on the filter label and/or in the published filter datasheets.
- ⓘ Cable or busbar cross sections have to be chosen in accordance with national and international electric codes and applicable product standards governing the equipment that will incorporate the power quality filters and the equipment in use.
- ⓘ Some filters provide additional terminals, e.g. for over-temperature monitoring. These features have to be properly used before energizing the filter. If uncertain, please consult your local Schaffner representative.
- ⓘ Active Harmonic Filters (AHF) are working with current transformers (CTs) which are a 3rd party product and which are typically installed in electrical equipment with lethal high voltage levels. Before attempting to install CTs read the CT installation safety page provided by the CT manufacturer. Always consider transformer as a part of the circuit to which it is connected, and do not touch the leads and terminals or other parts of the transformer unless they are known to be grounded.
- ⓘ In order to get the maximum benefit out of your power quality filter, please also consult additional user manuals, installation manuals, whitepaper and other material, published in the download section of www.schaffner.com. These additional guidelines provide helpful hints for equipment related topics as well as technical knowledge.

3. Safety Notes and Regulations

1. Label on equipment 2. Safety note category	Safety note regulations
	Equipment installation, start-up, operation and maintenance (if any) have to be carried out by a trained and certified electrician or technician, who is familiar with safety procedures in electrical systems. Non-qualified persons are not allowed to use, install, operate or maintain PQ filters!
	High voltage potentials are involved in the operation of power quality equipment. Always remove power before handling energized parts of the filter, and let ample time elapse for the capacitors to discharge to safe levels (<42V). Residual voltages are to be measured both line to line and line to earth.
	Correct protective earthing of the equipment must be established and the user must be protected against supply voltage in accordance with applicable national and local regulations. Always practice the safety procedures defined by your company and by applicable national electric codes when handling, installing, operating or maintaining electrical equipment.
	Some product may include EMC filters which may cause leakage currents to ground. Always connect the filter to protective earth (PE) first, then continue with the wiring of phase/neutral terminals. When decommissioning the filter, remove the PE connection at the end.
	Using the direct OFF setting in AHF does not disconnect the equipment from mains and is thus not to be used as a safety switch.
	Follow the general installation and environmental condition notes closely. Ensure that cooling slots (if any) are free from obstructions that could inhibit efficient air circulation. Operate the filter within its electrical, mechanical, thermal and ambient specifications at all times.
	Power quality filters are lossy electrical components. Parts/surfaces of the equipment may get hot under load operating conditions.
NOTICE	At altitudes above 2000m, please contact Schaffner prior to installation.
NOTICE	Filter suitability for a given application must ultimately be determined by the user (the party that is putting the filter into operation) on a case by case basis. Schaffner will not assume liability for any consequential downtimes or damages resulting from use of filters outside their specifications.
	In case of uncertainty and questions please contact your local Schaffner partner for assistance (details per region available at www.schaffner.com).

3 Welcome

3.1 About this manual

This manual intended to provide comprehensive information on failure analysis for customer of Ecosine® active harmonic filters. The issues discussed in this guide, cover the basic failure analysis of Ecosine® active harmonic filters for customers. The guide will familiarize you with the required hardware checks.

3.2 Who should read this guide

The primary audience for this book is for customers, responsible for using of Ecosine® active harmonic filters. To fully understand the guide, you should have a good knowledge of electronic and electrical systems and at least some basic power quality habits. Attending Schaffner International training courses is not mandatory.

3.3 Personnel qualification

Any analysis actions on Ecosine® active harmonic filters, not mentioned in this guide, are allowed only by trained and certified Schaffner service partners and only after the release of Schaffner service organization.



CAUTION

Caution

Testing tasks should only be performed by trained and skilled personnel to avoid damages to the unit or injuries of personnel.



WARNING

Warning

Changing of spear parts may cause malfunction of device and can cause injuries of personnel if not properly performed.

3.4 Get support

Schaffner is in the unique position of being able to support the partner with problem analyses, engineering advice, testing and measurement support, custom products, and a worldwide customer service support. Our goal is to ensure that you obtain the level of support you actually need. Toward this objective, we invite you to contact your local Schaffner service responsible at local office hours that we may support you. You can find out more about Schaffner Service and your local contact on our service website or you may contact us via email:

Service URL: www.schaffner.com/service/
Service E-mail for APAC: apac-pqservice@schaffner.com
Service E-mail for EMEA: emea-pqservice@schaffner.com
Service E-mail for India: india-pqservice@schaffner.com
Service E-mail for USA: usa-pqservice@schaffner.com

4 Failure analysis checklist

Attention!

Before starting to work on the device, ensure that it is switched off, disconnected from the grid and capacitors are discharged

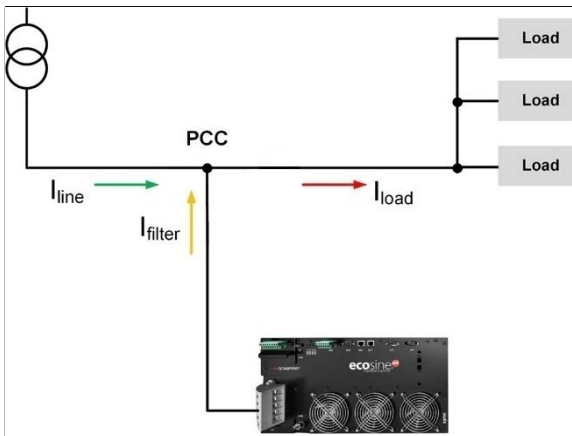
4.1 Tool list



FAILURE ANALYSIS TOOL LIST

1. Multi meter
2. AHF viewer (if available)

4.2 Failure analysis



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

Load type:

Load values:

External fuses:



Specify the type and value of the used current transformer and where they are installed

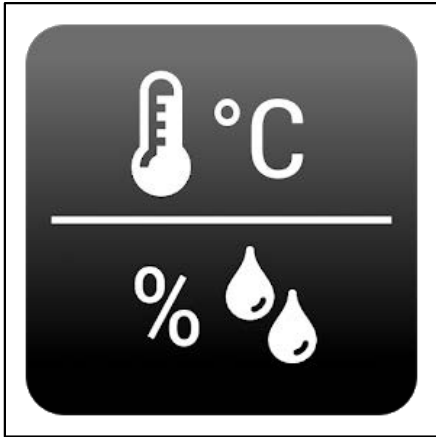
CT Brand:

CT Value:

Main side:

Load side:

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Specify the environmental conditions as ambient temperature in °C and humidity in %. As well indicate the device temperature during operation

Ambient temperature: °C

Device temperature: °C

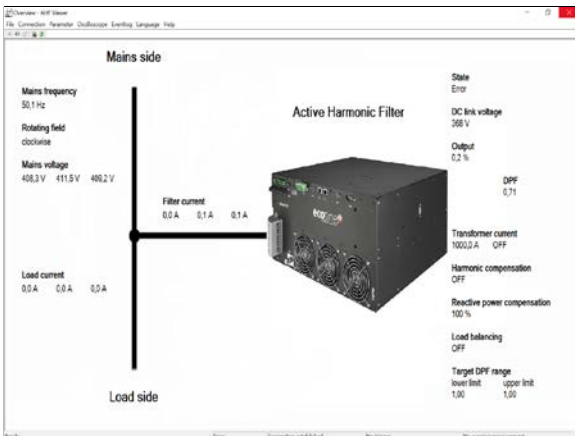
Humidity: %



Specify the exact information showed in the display. Status or error message, if possible

Error message:

Status message:



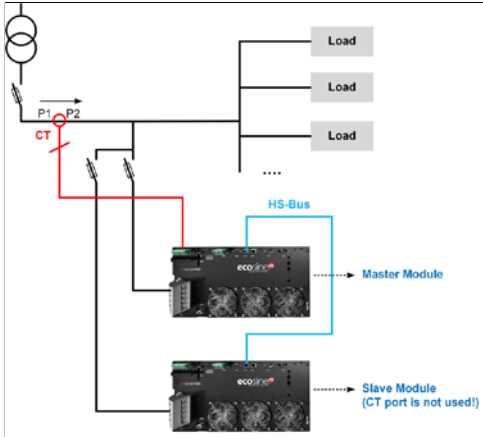
Parameter setting and eventlog of all installed devices are required. These can be downloaded by AHF Viewer.

Download possible?

Parameter file: Yes No

Eventlog: Yes No

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If any other Schaffner filters are installed in the same application specify:

Type and qty:

If any other problems are detected on these other filters, specify them:

.....



Check the external fuses

Ok Not Ok

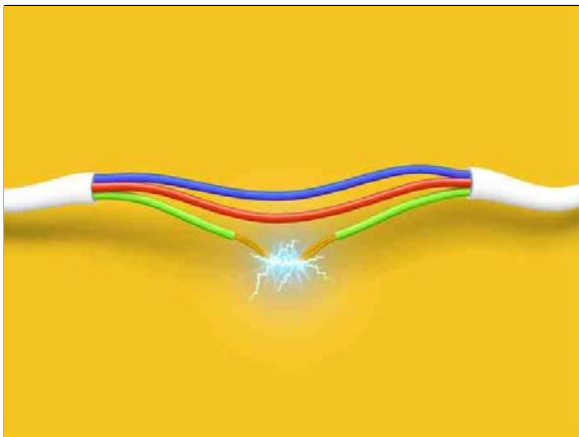


If one or more than one of the external fuses are not ok, contact the Schaffner Service Center

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If all fuses are ok, check on the main connection of the device the 3 phases against ground



If you dont have the expected voltage on every phase, you have a problem with the cabling

Phase 1	<input type="checkbox"/>	Ok	<input type="checkbox"/>	Not Ok
Phase 2	<input type="checkbox"/>	Ok	<input type="checkbox"/>	Not Ok
Phase 3	<input type="checkbox"/>	Ok	<input type="checkbox"/>	Not Ok



If you have the expected voltage on every phase, check from outside of the device, if inside the device any LED are on, either a green

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Or an orange

Green Dark

Orange



If no LED is on, contact the Schaffner Service Center



If the green or an orange LED is on or blinking, disconnect the device external from the grid by disconnecting the fuses and switch it on again after 3 minutes

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Check on the front side if the LED are on and if the display is working (if available)

- Green Dark
- Orange



If the LED are on, perform a function test, If the LED are not on, contact the Schaffner Service Center

Schaffner Group

Nordstrasse 11
4542 Luterbach
Switzerland

T +41 32 681 66 26
F +41 32 681 66 30

info@schaffner.com
www.schaffner.com

Schaffner Service Centers

APAC

Schaffner EMC Ltd. Shanghai
T20-3, No 565 Chuangye Road
Pudong New Area
Shanghai 201201
China

EMEA

Schaffner EMC S.A.S.
Rue du Luxembourg 16
68310 Wittelsheim
France

India

Schaffner India Pvt. Ltd
"ShriNivas" 26, 2nd Street,
Kasthuri Nagar Extension,
Ondipudur, Coimbatore - 641 016
Tamil Nadu
India

North America

Schaffner EMC Inc.
52 Mayfield Avenue
Edison
New Jersey 08837
United State of America

To find your local partner within
Schaffner's global network, please go to
www.schaffner.com

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