

ECOsine® active harmonic filters

Environmental parameters and conditions

This document classifies groups of environmental parameters and their severities to which ECOsine® active harmonic filters are subjected when mounted for stationary use at weather protected locations under use conditions, including periods of erection work, down time, maintenance and repair. The lifetime of electronic equipment is depending on the environmental conditions they are exposed to. Especially in harsh environments lifetime is reduced due to the corrosiveness of the atmospheric environment. Generally corrosion in micro or power electronics depends on several variants such as the package type, materials involved, assembly processes, moisture, inorganic and organic contaminants, atmospheric pollutants, temperature, thermal stress and electrical bias. To increase the lifetime Schaffner provides all ECOsine® active filters with the ability to work within pollution degree 2 (PD2) and does use coated PCB's according to IEC61721-3-3. Schaffner standard PCB construction complies with class 3C2. Please carefully read the provided information and check if your application fulfills the required specifications as **Schaffner expressly points out that the manufacturer's warranty shall lapse with immediate effect if ECOsine® active harmonic filters are transported, stored, installed or operated outside their published specifications.**

<p>Important</p> 	<p>ECOsine® active harmonic filters (AHF) listed below are IP20 or IP54 devices to be installed in an environment in compliance with the requirements named in this document.</p> <p>All AHF must be installed in a clean, dry location, e.g. in sufficiently ventilated or air conditioned electric cabinets or closed electric rooms. Contaminants such as oils, liquids, corrosive vapors, abrasive debris, dust and aggressive gases must be kept out of the filter enclosure.</p> <p>WARNING: Conductive dust may cause damage to ECOsine active harmonic filters. Ensure that installation site of AHF is free of conductive dust.</p>
<p>Products</p>	<p>FN3420 series, 3-wire filters, models 30...300A FN3430 series, 4-wire filters, models 30...300A</p>
<p>Overvoltage class (EN50178)</p>	<p>ECOsine® active are designed according to EN 50178 overvoltage class III</p>
<p>Storage environmental specifications (IEC 60721-3-1, EN50178)</p>	<p>Climate conditions for storage class 1K3:</p> <ul style="list-style-type: none"> • Temperature range: -25°C to +55°C • Relative humidity: < 95%, no condensation • Atmospheric pressure: 70KPa to 106KPa
<p>Transportation</p>	<p>Climate conditions for transport class 2K3:</p>

environmental specifications (IEC 60721-3-2, EN50178)	<ul style="list-style-type: none"> • Temperature range: -25°C to +70°C • Relative humidity: < 95%, no condensation • Atmospheric pressure: 70KPa to 106KPa 																																										
Operation environmental specifications (IEC 60721-3-3, EN50178)	Climate conditions for operation class 3K3: <ul style="list-style-type: none"> • Temperature range: 0°C to +40°C • Relative humidity: < 95%, no condensation • Atmospheric pressure: 70KPa to 106KPa 																																										
Degree of pollution (IEC 61010, EN50178)	Pollution conditions for operation class PD2																																										
Corrosive levels (IEC 60721-3-3)	Climate conditions for storage, transport and operation Class 3C2 ⁽³⁾ : <ul style="list-style-type: none"> • Applies to locations with normal levels of contaminants, experienced in urban areas with industrial activities • Levels: <table border="1" data-bbox="571 1137 1380 1675"> <thead> <tr> <th rowspan="2">Environmental parameter</th> <th rowspan="2">Units⁽¹⁾</th> <th colspan="2">Class 3C2⁽²⁾</th> </tr> <tr> <th>Mean value</th> <th>Max value</th> </tr> </thead> <tbody> <tr> <td>Sea salt</td> <td></td> <td colspan="2" style="text-align: center;">Salt mist</td> </tr> <tr> <td>Sulphur dioxide</td> <td>ppm cm³/m³</td> <td>0.3 0.11</td> <td>1.0 0.37</td> </tr> <tr> <td>Hydrogen sulphide</td> <td>ppm cm³/m³</td> <td>0.1 0.071</td> <td>0.5 0.36</td> </tr> <tr> <td>Chlorine</td> <td>ppm cm³/m³</td> <td>0.1 0.034</td> <td>0.3 0.1</td> </tr> <tr> <td>Hydrogen chloride</td> <td>ppm cm³/m³</td> <td>0.1 0.066</td> <td>0.5 0.33</td> </tr> <tr> <td>Hydrogen fluoride</td> <td>ppm cm³/m³</td> <td>0.01 0.012</td> <td>0.03 0.036</td> </tr> <tr> <td>Ammonia</td> <td>ppm cm³/m³</td> <td>1.0 1.4</td> <td>3.0 4.2</td> </tr> <tr> <td>Ozone</td> <td>ppm cm³/m³</td> <td>0.05 0.025</td> <td>0.1 0.05</td> </tr> <tr> <td>Nitrogen oxides</td> <td>ppm cm³/m³</td> <td>0.5 0.26</td> <td>1.0 0.52</td> </tr> </tbody> </table> <p data-bbox="571 1709 1380 1787">⁽¹⁾The values given in cm³/m³ have been calculated from the values given in mg/m³ and refer to a temperature of 20 °C and a pressure of 101,3 kPa. The table uses rounded values.</p> <p data-bbox="571 1792 1380 1843">⁽²⁾Mean values are expected long-term values. Maximum values are limit or peak values, occurring over a period of time of not more than 30 min per day.</p> <p data-bbox="571 1848 1380 1915">⁽³⁾IEC 60721-3-3 is only applied to the coated PCB covered areas and not the entire device. The unprotected areas, such as connections, terminations and exposed magnetics, may not survive these exposure levels over time.</p>	Environmental parameter	Units ⁽¹⁾	Class 3C2 ⁽²⁾		Mean value	Max value	Sea salt		Salt mist		Sulphur dioxide	ppm cm ³ /m ³	0.3 0.11	1.0 0.37	Hydrogen sulphide	ppm cm ³ /m ³	0.1 0.071	0.5 0.36	Chlorine	ppm cm ³ /m ³	0.1 0.034	0.3 0.1	Hydrogen chloride	ppm cm ³ /m ³	0.1 0.066	0.5 0.33	Hydrogen fluoride	ppm cm ³ /m ³	0.01 0.012	0.03 0.036	Ammonia	ppm cm ³ /m ³	1.0 1.4	3.0 4.2	Ozone	ppm cm ³ /m ³	0.05 0.025	0.1 0.05	Nitrogen oxides	ppm cm ³ /m ³	0.5 0.26	1.0 0.52
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