

# ECOsine® 50 Hz, IP 00, Passive Harmonic Filters

- The industry standard for 6-pulse rectifiers and motor drives

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- The most compact 5% THID filter available

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- Open Frame Filters (IP 00)

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- Excellent behavior under partial load conditions

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- Filters for diode and thyristor rectifiers without DC-link choke

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## Technical specifications

<b>Nominal operating voltage</b>	3 x 380 VAC to 415 VAC ±10%
<b>Nominal motor drive input current rating</b>	1.1 to 200 kW
<b>Operating frequency</b>	50 Hz ±1 Hz
<b>Total harmonic current distortion THID*</b>	<5% at rated power
<b>Total demand distortion TDD</b>	According to IEEE 519
<b>Efficiency</b>	>98.5% for rated voltage and power
<b>High potential test voltage</b>	P → E 2160 VAC (1 s)
<b>Protection category</b>	IP 00
<b>Cooling</b>	External cooling**
<b>Overload capability</b>	1.6x rated current for 1 minute, once per hour
<b>Ambient temperature range</b>	-25°C to +45°C fully operational -25°C to +88°C transport and storage +45°C to +70°C derated operation***
<b>Design corresponding to</b>	Filter: UL 61800-5-1, EN 61800-5-1 Chokes: EN 61558-2-20 or EN 60076-6
<b>Flammability corresponding to</b>	UL 94 V-2
<b>MTBF @ 45°C/415 V (Mil-HB-217F)</b>	>200,000 hours
<b>Earthing System</b>	TN, TT, IT

\* System requirements: THVD <2%, line voltage unbalance <1%  
 Note: performance specifications in this brochure refer to six-pulse diode rectifiers.  
 SCR rectifier front-ends will produce different results, dependent upon the firing angle of the thyristors.  
 \*\* Please check the air cooling requirements' table on page 3 of this document.  
 \*\*\*  $I_{derated} = I_{nom} \cdot \sqrt{(70^\circ\text{C} - T_{amb}) / 25^\circ\text{C}}$

## Approvals

## ROHS

## Features and benefits

Schaffner ECOsine harmonic filters represent an economical solution to the challenge of load-applied harmonics mitigation in three-phase power systems. With a plug-and-play approach and more compact dimensions than comparable products, they can be quickly installed and easily commissioned. They increase the reliability and service life of electric installations, help utilize electric sytem capacity better, and are the key to meet Power Quality standards such as IEEE 519. ECOsine filters reshape your distorted current back to the desired sinusoidal waveform. Schaffner ECOsine filters can be applied to virtually any kind of power electronics with front-end six-pulse rectifiers, 3-phase diode or thyristor bridges, where harmonic current distortion needs to be reduced to defined limits.

## Typical applications

- Equipment with front-end six-pulse rectifier

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- Motor drives

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- Factory automation equipment

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- Water/wastewater treatment facilities

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- Fan and pump applications

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- HVAC installations

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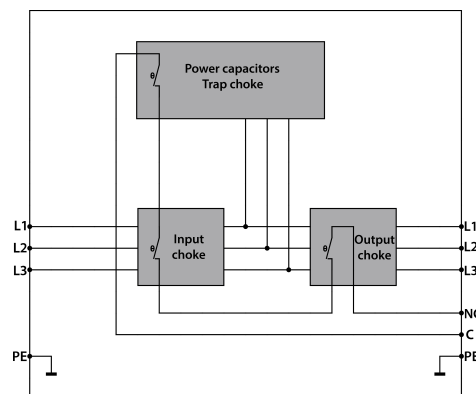
- Mission-critical processes

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- DC fast chargers

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## Typical electrical schematic



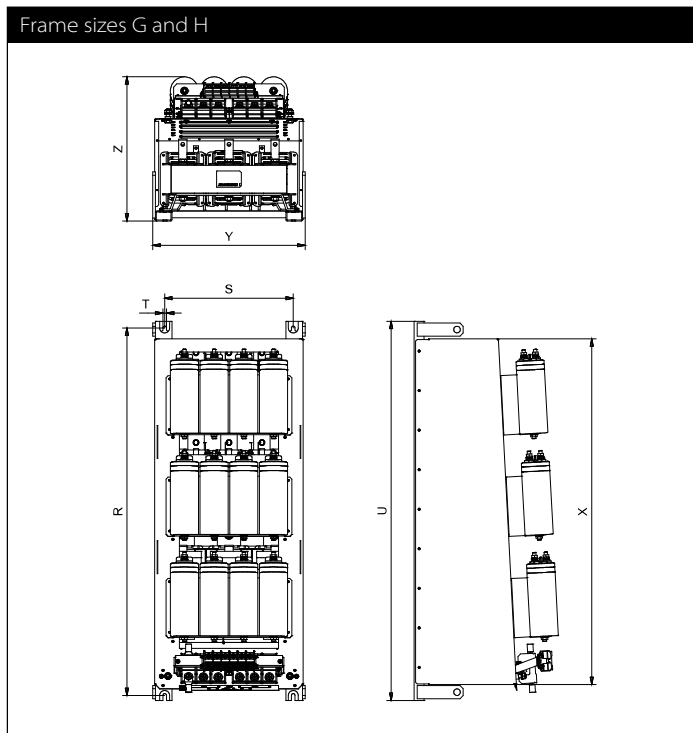
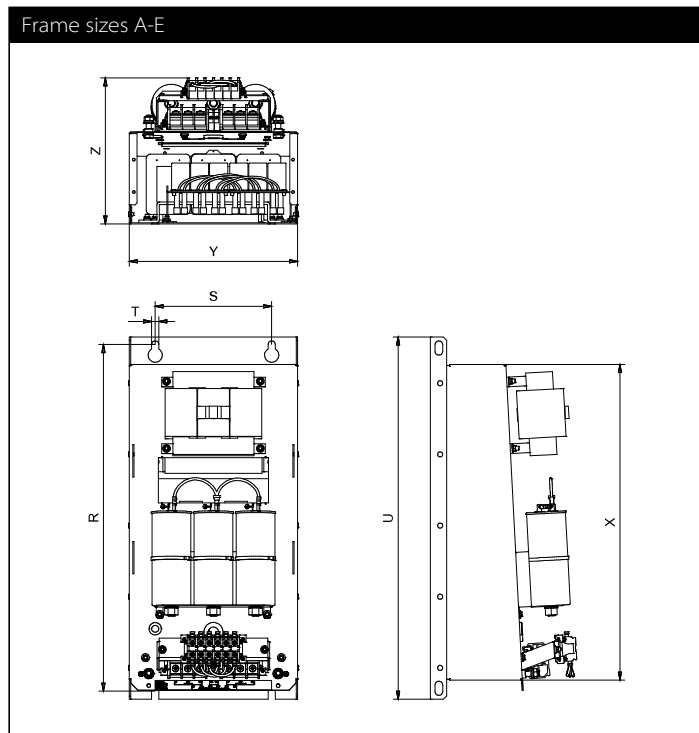
## Filter selection table

Filter	Rated load power @ 400 V/50 Hz [kW]	Weight [kg]	Terminals	Frame size
FN3440-1-110-E0X	1.1	9.3	110	A
FN3440-2-110-E0X	2.2	11	110	A
FN3440-4-112-E0X	4		112	B
FN3440-6-112-E0X	5.5		112	C
FN3440-8-112-E0X	7.5	22.9	112	C
FN3440-11-113-E0X	11		113	D
FN3440-15-113-E0X	15		113	D
FN3440-19-113-E0X	19	38.5	113	D
FN3440-22-115-E0X	22		115	E
FN3440-30-115-E0X	30		115	E
FN3440-37-115-E0X	37		115	E
FN3440-45-115-E0X	45		115	E
FN3440-55-115-E0X	55	74.5	115	E
FN3440-75-116-E0X	75		116	G
FN3440-90-116-E0X	90	139.5	116	G
FN3440-110-118-E0X	110		118	H
FN3440-132-118-E0X	132		118	H
FN3440-160-118-E0X	160		118	H
FN3440-200-118-E0X	200	259.0	118	H

## Filter terminals

Terminal designation	Screw thread	Screw Torque Value [Nm]	Pressure plate (width or diameter) [mm]	Frame size
110	M3	0.5	7	A
112	M4	1.2	10	B, C
113	M6	3.0	16	D
115	M8	8	20	E
116	M8	8	17.5	G
118	M10	10	21	H

### Mechanical data



### Dimensions FN 3440

Frame	Drill pattern			Base	X	Y	Volume
	R	S	T				
A	340	120	7	360	302	160	185
B	405	120	7	370	370	180	206
C	460	150	7	425	430	210	221
D	540	180	11	483	491	260	252
E	680	220	11	705	634	290	339
G	920	280	11	960	863	353	396
H	1115	390	11	1150	1053	462	456

### Air cooling requirements

Frame size	Min air volume [m3/h]
A, B, C	0
D	128
E	204
G	408
H	612



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