

Fact Sheet

# VLT® Advanced Harmonic Filter AHF 005 and AHF 010



## Optimised harmonic performance for VLT® frequency converters rated up to 250 kW.

The VLT® Advanced Harmonic Filter has been specially designed to match the Danfoss frequency converters for unmatched performance and design.

Compared to traditional harmonic trap filters, the VLT® Advanced Harmonic Filter offers a smaller foot print and higher harmonic reduction.

The filter is available in two variants, AHF 005 and AHF 010. When connected at the input to a Danfoss VLT® frequency converter, the harmonic current distortion generated back to the mains is reduced to 5% or 10% Total Harmonic Current Distortion (THiD) at full load.

With efficiency exceeding 98% the passive filters AHF 005 and AHF 010 offer cost-effective and very robust harmonic solutions specifically for power ranges up to 250 kW.

As stand-alone options the advanced harmonic filters feature a compact housing that is easily integrated into existing panel space. This makes them well-suited for retrofit applications with limited adjustments of the frequency converter.

## Line Voltage

- 380 – 415 V AC (50 and 60 Hz)
- 440 – 480 V AC (60 Hz)
- 600 V AC (60 Hz)
- 500 – 690 V AC (50 Hz)

## Filter current

- 10 A-480 A (380-415 V AC, 50 and 60 Hz)
- 10 A-436 A (440-480 V AC, 60 Hz)
- 15 A-395 A, (600 V AC, 60 Hz)
- 15 A-395 A (500-690 V AC, 50 Hz)
- Modules can be paralleled for higher power

## Enclosure IP rating

- IP 20\*/IP 00\*\*

\* An IP 21/NEMA 1 upgrade kit is available for the IP 20 unit. Order separately.

\*\* Forced cooling is required. There is no fan in the IP 00 unit. Implement separate cooling measures in the cabinet as part of the installation.

## Perfect

match for industrial automation, highly dynamic applications and safety installations

Feature	Benefit
<b>Reliable</b> <ul style="list-style-type: none"> <li>- 100% factory tested</li> <li>- Based on proven and tested filter concept</li> </ul>	<b>Maximum uptime</b> <ul style="list-style-type: none"> <li>- Low failure rate</li> </ul>
<b>Energy saving</b> <ul style="list-style-type: none"> <li>- High efficiency</li> <li>- Electrically matched to the individual VLT® frequency converters</li> </ul>	<b>Lower operation costs</b> <ul style="list-style-type: none"> <li>- Low running expenses</li> </ul>
<b>Design</b> <ul style="list-style-type: none"> <li>- Innovative coil design</li> <li>- Side-by-side mounting</li> <li>- Optimised for mounting in panels</li> </ul>	<b>Compact and aesthetic enclosure</b> <ul style="list-style-type: none"> <li>- Smaller footprint</li> <li>- Less wall space needed</li> </ul>
<ul style="list-style-type: none"> <li>- Easy commissioning</li> <li>- Enclosure size and colour matches</li> </ul>	<ul style="list-style-type: none"> <li>- Low commissioning costs</li> <li>- Danfoss look and feel</li> </ul>

### Accessories

The following accessories are available:

- IP 21/NEMA 1 kit
- IP 21/NEMA 1 kit with capacitor disconnect feature
- Backplate for IP 20 enclosures

### Harmonic Calculation Software

With VLT® Motion Control Tool MCT 31, you can determine whether harmonics will have a detrimental effect on an installation incorporating frequency converters.

MCT31 calculates system harmonic distortion. Then it estimates the benefits of implementing harmonic mitigation, using filters available from Danfoss. Furthermore the software provides quick indication of whether the installation complies with the most recognised harmonic norms and recommendations.

Download the MCT31 software free of charge at [www.vlt-drives.danfoss.com](http://www.vlt-drives.danfoss.com).

### Specifications

	AHF 010	AHF 005
THiD* at:		
- 40% load	~ 12%	~ 7%
- 70% load	~ 11%	~ 6%
- 100% load	< 10%	< 5%
Efficiency* at 100% load	>98.5%	
True power factor* at:		
- 40% load	~ 81%	~ 80%
- 70% load	~ 96%	~ 95%
- 100% load	> 99%	> 98%
Ambient temperature	45° C without derating	
Cooling	For enclosures rated IP 20, back channel cooling is built in. For enclosures rated IP 00, implement separate cooling measures as part of the installation.	

\* Measured at balanced grid without pre-distortion

Norms and recommendations	Compliance
IEEES19	AHF 005 is compliant under all conditions AHF 010 is compliant dependent on grid and load conditions
IEC61000-3-2 (up to 16 A)	AHF 005 and AHF 010
IEC61000-3-12 (between 16 and 75 A)	AHF 005 and AHF 010
IEC61000-3-4 (above 75 A)	AHF 005 and AHF 010

### Enclosures

AHF current rating										AHF enclosure Type
380-415 V/ 50 Hz		380-415 V/ 60 Hz		440-480 V/ 60 Hz		600/ 60 Hz		500-690 V/ 50 Hz		
AHF 005 [A]	AHF 010 [A]	AHF 005 [A]	AHF 010 [A]	AHF 005 [A]	AHF 010 [A]	AHF 005 [A]	AHF 010 [A]	AHF 005 [A]	AHF 010 [A]	
10	10	10	10	10	10	-	-	-	-	X1
14	14	14	14	14	14	-	-	-	-	
22	22	22	22	19	19	-	-	-	-	X2
29	29	29	29	25	25	-	-	-	-	
34	34	34	34	31	31	15	15	15	15	X3
40	40	40	40	36	36	20	20	20	20	
55	55	55	55	48	48	24	24	24	24	
66	66	66	66	60	60	29	29	29	29	X4
82	82	82	82	73	73	36	36	36	36	
96	96	96	96	95	95	50	50	50	50	X5
133	133	133	133	118	118	58	58	58	58	
171	171	171	171	154	154	77	77	77	77	X6
204	204	204	204	183	183	87	87	87	87	
						109	109	109	109	
	251		251	231	231	155	155	155	155	X7
	304		304			197	197	197	197	
	325		325			240	240	240	240	
	381		381							X8
	480	304	480	291	436	240	296	240	296	
		325		355		296	366	296	366	
		381		380			395		395	
		480		436						

### Dimensions

Enclosure type	Height <sup>(1)</sup> [mm]	Width [mm]	Depth [mm]
X1	347	190	206
X2	451	230	248
X3	605	378	242
X4	634	378	333
X5	747	418	333
X6	778	418	400
X7	900	468	450
X8	900	468	515

<sup>(1)</sup>: Maximum dimension. The exact dimension depends on fan concept.  
For the exact dimensions, refer to the Design Guide Advanced Harmonic Filters.

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