ENGINEERING TOMORROW

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
Reliable	**Maximum uptime**
– 100% factory tested – Based on proven and tested filter concept	– Low failure rate
Energy saving	**Lower operation costs**
– High efficiency – Electrically matched to the individual VLT® frequency converters	– Low running expenses
Design	**Compact and aesthetic enclosure**
– Innovative coil design – Side-by-side mounting – Optimised for mounting in panels	– Smaller footprint – Less wall space needed
– Easy commissioning	– Low commissioning costs
– Enclosure size and colour matches	– Danfoss look and feel

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.

MCT 31 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 MCT 31 software free of charge at www.vlt-drives.danfoss.com.

Specifications

	AHF 010	AHF 005
THiD* at: – 40% load – 70% load – 100% load	 ~ 12% ~ 11% < 10%	 ~ 7% ~ 6% < 5%
Efficiency* at 100% load	>98.5%	
True power factor* at: – 40% load – 70% load – 100% load	 ~ 81% ~ 96% > 99%	 ~ 80% ~ 95% > 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
IEEE519	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
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	AHF 010	AHF 005	AHF 010	AHF 005	AHF 010	AHF 005	AHF 010	AHF 005	AHF 010	
[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	Type
10 14	10 14	10 14	10 14	10 14	10 14	–	–	–	–	X1
22 29	22 29	22 29	22 29	19 25	19 25	–	–	–	–	X2
34 40 55	34 40 55	34 40 55	34 40 55	31 36 48	31 36 48	15 20 24	15 20 24	15 20 24	15 20 24	X3
66 82	66 82	66 82	66 82	60 73	60 73	29 36	29 36	29 36	29 36	X4
96 133	96 133	96 133	96 133	95 118	95 118	50 58	50 58	50 58	50 58	X5
171 204	171 204	171 204	171 204	154 183	154 183	77 87 109 128	77 87 109 128	77 87 109 128	77 87 109 128	X6
251 304	251 304 325 381	251	251 304 325 381	231	231 291 355 380	155 197	155 197 240	155 197	155 197 240	X7
325 381 480	480	304 325 381 480	480	291 355 380 436	436	240 296	296 366 395	240 296	296 366 395	X8

Dimensions

Enclosure type	Height (*1) [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

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

Danfoss VLT Drives, Ulsnaes 1, DK-6300 Graasten, Denmark, Tel. +45 74 88 22 22, Fax +45 74 65 25 80, www.danfoss.com/drives, E-mail: info@danfoss.com