

HF... Output Filter

for MOVIDRIVE® and MOVITRAC® 31C

Edition 04/2000

- This additional information does not replace the detailed operating instructions!
- Installation and startup only by trained personnel observing all valid accident prevention regulations and MOVIDRIVE® or MOVITRAC® 31C operating instructions!



Caution: Output filters on MOVIDRIVE® units only approved for VFC operating mode!
Do not connect output filters to 230 V units (...-233)!
Do not use output filters on hoist applications!

Output filters are used:

- in group applications (several motor cables in parallel); the shifting currents in the motor cables are suppressed.
- to protect the motor winding of non-SEW motors from overvoltage spikes, not designed for PWM-inverter operation.

Technical data HF...-503:

Type of output filter	HF008-503	HF015-503	HF022-503	HF030-503	HF040-503	HF055-503	HF075-503	HF450-503
Part number	826 029 X	826 030 3	826 031 1	826 032 X	826 311 6	826 312 4	826 313 2	826 948 3
Rated voltage V_N	$3 \times 380 V_{AC} -10\% \dots 3 \times 500 V_{AC} +10\%$, 50/60 Hz ¹⁾							
Voltage drop in the filter (at rated current) ΔV	< 6.5% (7.5%) at 400 V / < 4% (5%) at 500 V at $f_{Amax} = 50$ Hz (60 Hz)							
Rated through current ²⁾ (at $V_{in} = 3 \times 400 V_{AC}$) I_{N400V}	2.5 A _{AC}	4 A _{AC}	6 A _{AC}	8 A _{AC}	10 A _{AC}	12 A _{AC}	16 A _{AC}	90 A _{AC}
Rated through current ²⁾ (at $V_{in} = 3 \times 500 V_{AC}$) I_{N500V}	2 A _{AC}	3 A _{AC}	5 A _{AC}	6 A _{AC}	8 A _{AC}	10 A _{AC}	13 A _{AC}	72 A _{AC}
AC leakage current at V_N ΔI	0 mA							
Power loss at I_N P_{loss}	25 W	35 W	55 W	65 W	90 W	115 W	135 W	400 W
Interference emission via unshielded motor cables	according to class B limit to EN 55011 and EN 55014 complies with EN 50081, parts 1 and 2							
Ambient temperature ϑ_{amb}	0...+45°C (reduction: 3.0% I_N per K up to max. 60°C)							
Enclosure	IP 20 (EN 60529)							IP10
Terminals	terminal studs M4: 0.5...6 mm ² (AWG 20...10)							terminals 35 mm ² (AWG2)
Weight	3.1 kg (6.84 lb)	4.4 kg (9.70 lb)			10.8 kg (23.82 lb)		32 kg (70.58 lb)	
for MOVIDRIVE® at rated operation	-	0015	0022	0030	0040	0055	0075	0370/0450 0550 ³⁾ /0750 ³⁾
at increased power output	-	-	0015	0022	0030	0040	0055	0300/0370 0450 ³⁾ 0550 ³⁾ /0750 ³⁾
for MOVITRAC® 31C at rated operation	008	015	022	030	040	055	075	370/450
at increased power output	008	008	015	022	030	040	055	300/370 450 ³⁾

1) above $f_{in} = 60$ Hz the rated through current I_N is derated by 6% I_N per 10 Hz increase

2) applies only for operation without V_{DClink} connection

3) for operation on these units, connect **two output filters in parallel!**

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Technical data HF...-403:

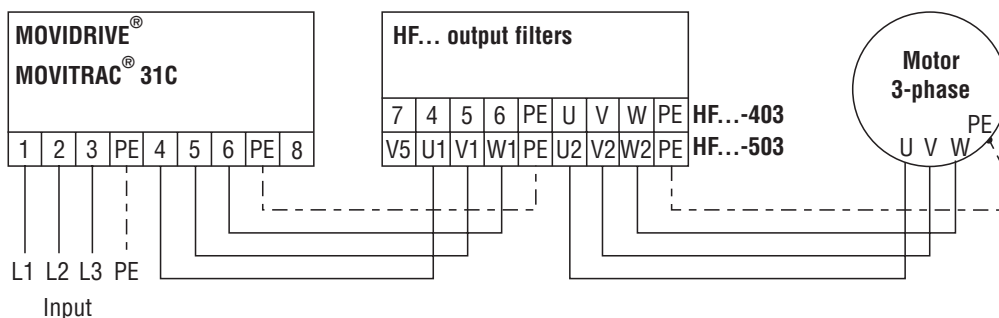
Type of output filter		HF023-403	HF033-403	HF047-403
Part number		825 784 1	825 785 X	825 786 8
Rated voltage	V_N	$3 \times 380 V_{AC} -10\% \dots 3 \times 500 V_{AC} +10\%$, 50/60 Hz ¹⁾		
Voltage drop in filter (at rated current)	ΔV	< 6.5% (7.5%) at 400 V / < 4% (5%) at 500 V at $f_{Amax} = 50$ Hz (60 Hz)		
Rated through current ²⁾ (at $V_{in} = 3 \times 400 V_{AC}$)	I_{N400V}	23 A _{AC}	33 A _{AC}	47 A _{AC}
Rated through current ²⁾ (at $V_{in} = 3 \times 500 V_{AC}$)	I_{N500V}	19 A _{AC}	26 A _{AC}	38 A _{AC}
AC leakage current at V_N	ΔI	0 mA		
Power loss at I_N	P_{loss}	90 W	120 W	200 W
Interference emission via unshielded motor cable		according to class B limit to EN 55011 and EN 55014 complies with EN 50081, parts 1 and 2		
Ambient temperature	ϑ_{amb}	0...+45°C (reduction: 3.0% I_N per K up to max. 60°C)		
Enclosure		IP 20 (EN 60529)		
Terminals		terminals 25 mm ² (AWG 4)		
Weight		15.9 kg (35.0 lb)	16.5 kg (36.3 lb)	23.0 kg (50.6 lb)
for MOVIDRIVE [®] at rated operation		0110	0150 / 0300 ³⁾	0220
at increased power output		0075	0110 / 0220 ³⁾	0150
for MOVITRAC [®] 31C at rated operation		110	150 / 300 ³⁾	220
at increased power output		075	110 / 220 ³⁾	150

1) above $f_{in} = 60$ Hz the rated through current I_N is derated by 6% I_N per 10 Hz increase

2) applies only for operation without V_{DClink} connection

3) for operation on these units, connect **two output filters in parallel!**

Installation notes:



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- Output filter only approved for MOVITRAC[®] 31C, MOVIDRIVE[®] MDF/MCF and MOVIDRIVE[®] MDV/MCV units in VFC operating mode. Do not connect output filters to MOVIDRIVE[®] MDV units in CFC operating mode and to MOVIDRIVE[®] MDS (SERVO) units!
- Output filters are only approved for 400/500 V units. Do not connect output filters to 230 V units!
- Install output filters next to the corresponding inverter, complying with the necessary ventilation requirements according to the dimension tables.
- Limit the connection cable between inverter and output filter to the absolutely necessary length. Maximum 1 m with unshielded cable, 10 m with shielded cable or unshielded cable with HD... output choke between inverter and filter.
- Only an unshielded motor cable may be connected to the output filter. A shielded motor cable causes an excessive heating of the output filter.

- Several motors can be connected to one output filter when operating a motor group from one inverter. The sum of the motor rated current is not to exceed the rated through current of the output filter.
- It is possible to connect two output filters of the same type and rating to one inverter output in parallel to double the rated through current. All like connections must be connected in parallel on the output filters.
- Do not connect the output filter connection V5 (for HF...-503) or 7 (for HF...-403).
- See the following notes regarding the V_{DClink} connection (inverter: terminal 8 - HF...-503: terminal V5 or HF...-403: terminal 7)!

Operation without V_{DClink} connection (standard):

- approved for all PWM frequencies (4, 8, 12, 16 kHz)

Operation with V_{DClink} connection (special):

- improved filter effect in low-frequency range (≤ 150 kHz)
- approved for PWM frequency 12 kHz or 16 kHz only
Note: Power output reduction of units depending on PWM frequency!
- set PWM fix = "ON" (P862/P863 for MOVIDRIVE[®] and P311/P331 for MOVITRAC[®] 31C)

The inverter output current will be increased according to the following table by the V_{DClink} connection:

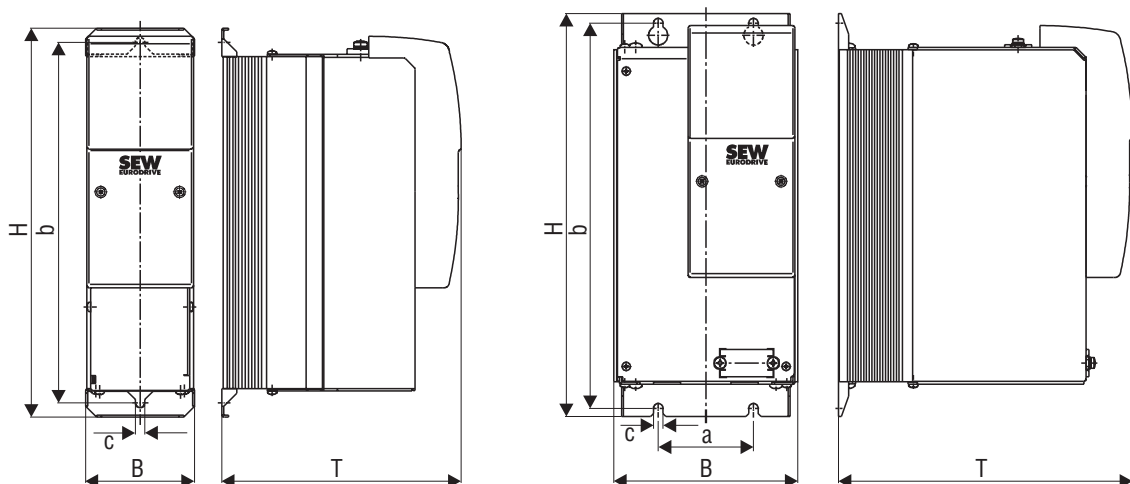
f_{PWM}	$V_{in} = 3 \times 400 V_{AC}$	$V_{in} = 3 \times 500 V_{AC}$
12 kHz	12%	15%
16 kHz	8%	12%

An overload interrupt of the inverter may occur when not observing this information.

Dimension sheet HF...-503 output filter:

HF 015/022/030-503

HF 040/055/075-503



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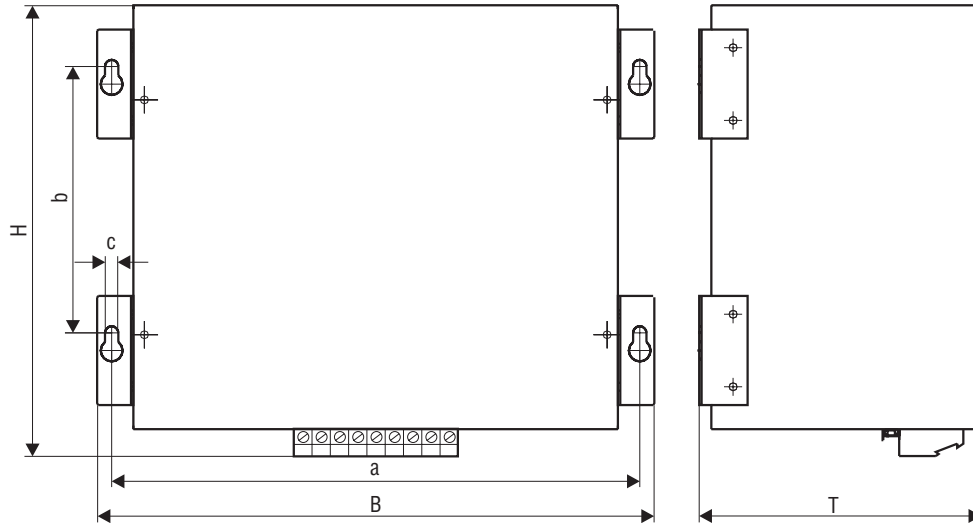
The only approved mounting position is the one shown in the dimension drawing.

all dimensions in mm (in):

Type of output filter	Main dimensions			Mounting dimensions		Hole dim. c	Venting clearance ¹⁾	
	B	H	T	a	b		top	bottom
HF015/022/030-503	80 (3.15)	286 (11.26)	176 (6.93)	-	265 (10.43)	7 (0.28)	100 (3.94)	100 (3.94)
HF040/055/075-503	135 (5.31)	296 (11.65)	216 (8.50)	70 (2.76)	283 (11.14)			

¹⁾ no lateral clearance required, the units can be mounted next to each other.

HF 450-503



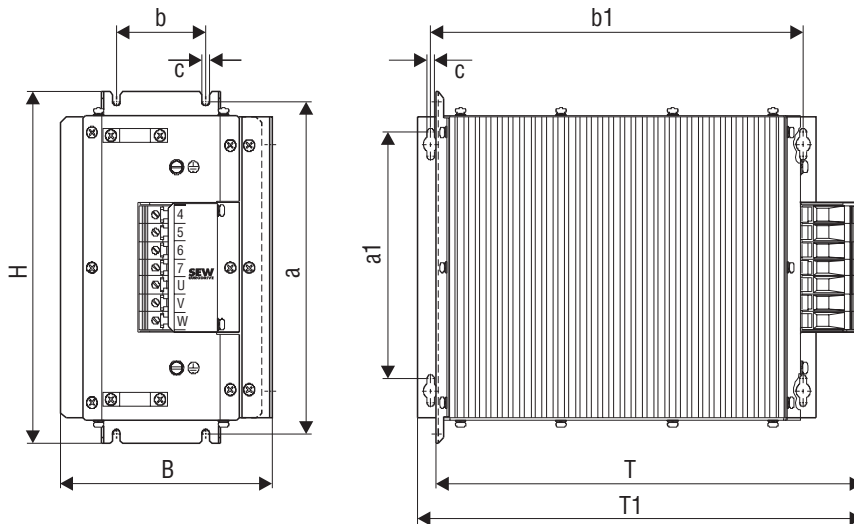
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The only approved mounting position is the one shown in the dimension drawing.

all dimensions in mm (in):

Type of filter	Main dimensions			Mounting dimensions		Hole dim. c	Venting clearance	
	B	H	T	a	b		top	bottom
HF450-503	465 (18.31)	385 (15.16)	240 (9.45)	436 (17.17)	220 (8.66)	8.5 (0.33)	100 (3.94)	100 (3.94)

Dimension sheet HF...-403 output filter:



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HF...-403 output filters can be mounted in a standard position as well as a horizontal position (reduced mounting depth). This installation requires removal of the rear mounting rails; the mounting dimensions a1/b1 and main dimension T1 apply.

all dimensions in mm (in):

Type of output filter	Main dimensions			Mounting dim. (standard inst.)		Mounting dim. (horizontal inst.)		Hole dim. c	Venting clearance		
	B	H	T/T1	a	b	a1	b1		lateral	top	bottom
HF023-403	145 (5.71)	284 (11.18)	365/390 (14.37/15.35)	268 (10.55)	60 (2.36)	210 (8.27)	334 (13.15)	6.5 (0.26)	je 30 (1.18 ea)	150 (5.91)	150 (5.91)
HF033-403											
HF047-403	190 (7.48)	300 (11.82)	385/400 (15.16/15.57)	284 (11.18)	80 (3.15)						