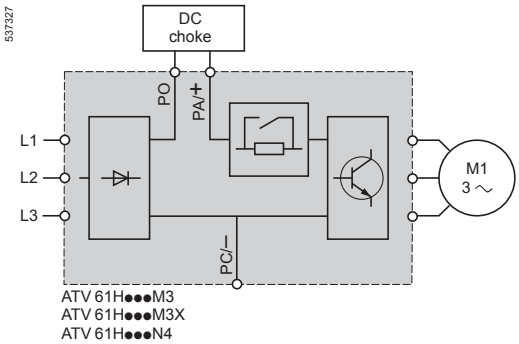
Variable speed drives
Altivar 61: reduction of current harmonics
Option: DC chokes



Depending on the line supply, the main solutions for reducing current harmonics are as follows:
- DC chokes *(1)* (see below)
- Line chokes *(1)* (see page 74)
- 16% and 10% passive filters *(1)* (see page 84)
- Use of passive filters with a DC choke (see pages 80 to 83)

These five solutions can be used on the same installation *(1)*.
It is always easier and less expensive to deal with current harmonics at installation level as a whole rather than at the level of each individual unit, particularly when using passive filters.

DC choke

DC chokes are used to reduce current harmonics in order to comply with standard IEC 61000-3-12 for drives in which the line current is more than 16 A and less than 75 A.

Using a DC choke with the drive complies with standard IEC 61000-3-12 provided that the RSCE ⩾ 120 at the point of connection to the public power supply.

It is the responsibility of the installer or the user to ensure that the device is connected correctly to a connection point with an RSCE ⩾ 120.
The DC choke is connected to the drive power terminals.

The DC choke is supplied as standard with ATV 61HD55M3X…HD90M3X and ATV 61HD90N4…HC63N4 drives, and integrated in ATV 61W●●●N4 and ATV 61W●●●N4C drives.

It provides IP 20 degree of protection.

Applications

Reduction of current harmonics.
Reduction of the THDI to 5% or 10% when used with passive filters (pages 78 to 81).
Maintaining the motor torque in relation to the line choke.

(1) For ATV 61H●●●S6X and ATV 61HU30Y…HD90Y drives, only line chokes are recommended. They are mandatory for ATV 61HC11Y…HC80Y drives (see page 74).

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Variable speed drives
Altivar 61: reduction of current harmonics
Option: DC chokes

References *(1)*

For drives	Inductance value	Nominal current	Losses	THDI *(2)*	Reference	Weight
	mH	A	W			kg
Three-phase supply voltage: 200…240 V 50/60 Hz						
ATV 61H075M3	6.8	8	22.5	41.27	**VW3 A4 503**	1.700
ATV 61HU15M3	3.2	14.3	32	42.4	**VW3 A4 505**	2.200
ATV 61HU22M3	2.2	19.2	33	43.33	**VW3 A4 506**	2.500
ATV 61HU30M3	1.6	27.4	43	43.22	**VW3 A4 507**	3.000
ATV 61HU40M3	1.2	44	61	43.91	**VW3 A4 508**	4.300
ATV 61 HU55M3	1.2	44	61	38		
ATV 61HU75M3	0.7	36	30.5	43.96	**VW3 A4 509**	2.500
ATV 61HD11M3X	0.52	84.5	77	38.14	**VW3 A4 510**	6.400
ATV 61HD15M3X	0.52	84.5	77	35		
ATV 61HD18M3X	0.22	171.2	86	38.5	**VW3 A4 511**	17.850
ATV 61HD22M3X	0.22	171.2	86	36.62		
ATV 61HD30M3X	0.09	195	73	43.51	**VW3 A4 512**	10.000
ATV 61 HD37M3X	0.09	195	73	39.24		
ATV 61HD45M3X	0.09	195	73	35.7		
Three-phase supply voltage: 380…480 V 50/60 Hz						
ATV 61H075N4	18	2.25	7.7	44.95	**VW3 A4 501**	0.650
ATV 61HU15N4	10	4.3	11	45.48	**VW3 A4 502**	1.000
ATV 61HU22N4	6.8	8	22.5	45	**VW3 A4 503**	1.700
ATV 61HU30N4	6.8	8	22.5	40.08		
ATV 61HU40N4	3.9	10.7	27	44.72	**VW3 A4 504**	1.650
ATV 61HU55N4	3.2	14.3	32	45.19	**VW3 A4 505**	2.200
ATV 61HU75N4	2.2	19.2	33	42.25	**VW3 A4 506**	2.500
ATV 61HD11N4	1.6	27.4	43	43.1	**VW3 A4 507**	3.000
ATV 61HD15N4	1.2	44	57.5	43.06	**VW3 A4 508**	4.300
ATV 61HD18N4	1.2	44	57.5	35.23		
ATV 61HD22N4	0.52	84.5	98.3	40.4	**VW3 A4 510**	6.400
ATV 61HD30N4	0.52	84.5	98.3	36.99		
ATV 61HD37N4	0.52	84.5	98.3	35.13		
ATV 61HD45N4	0.22	171.2	128	45.59	**VW3 A4 511**	17.850
ATV 61HD55N4	0.22	171.2	128	39.29		
ATV 61HD75N4	0.22	171.2	128	36.2		

(1) The DC choke is supplied as standard with ATV 61HD55M3X…HD90M3X and ATV 61HD90N4…HC63N4 drives.
It is integrated in ATV 61W●●●N4 and ATV 61W●●●N4C drives.
(2) Total current harmonic distortion in accordance with IEC 61000-3-12.

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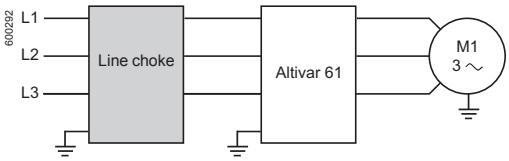
Variable speed drives
Altivar 61: reduction of current harmonics
Option: line chokes



Line chokes

A line choke can be used to provide improved protection against overvoltages on the line supply and to reduce harmonic distortion of the current produced by the drive.

The recommended chokes limit the line current.
They have been developed in line with standard IEC 61800-5-1 (VDE 0160 level 1 high-energy overvoltages on the line supply).

The choke values are defined for a voltage drop between phases of between 3% and 5% of the nominal supply voltage. Values higher than this will cause loss of torque.

Line chokes are mandatory:
- For ATV 61HU40M3…HU75M3 drives powered by a 200…240 V 50/60 Hz single-phase supply voltage
- For ATV 61HC11Y…HC80Y drives
- For ATV 61QC13Y…QC80Y drives

Their use is recommended for ATV 61H●●●S6X and ATV 61HU30Y…HD90Y drives.

Line chokes can be used instead of a DC choke with ATV 61H●●●M3 drives powered by a 200…240V 50/60 Hz three-phase supply voltage, and ATV 61H●●●M3X and ATV 61●●●●N4 drives.

***Note**: ATV 61HD90N4…HC63N4 drives, supplied as standard with a DC choke, can be ordered without a choke by adding the letter D at the end of the reference (see page 25).*

Chokes must be installed upstream of the drive.

Applications

The use of line chokes is recommended in particular under the following circumstances:
- Close connection of several drives in parallel
- Line supply with significant disturbance from other equipment (interference, overvoltages)
- Line supply with voltage imbalance between phases that is more than 1.8% of the nominal voltage
- Drive supplied by a line with very low impedance (in the vicinity of power transformers 10 times more powerful than the drive rating)
- Installation of a large number of frequency inverters on the same line
- Reduction of overloads on the cos φ correction capacitors, if the installation includes a power factor correction unit

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Variable speed drives
Altivar 61: reduction of current harmonics
Option: line chokes

References

For drives	Line supply Isc	Line choke				Quantity per drive	Reference	Weight
		Inductance value	Nominal current	Saturation current	Losses			
	kA	mH	A	A	W			kg
Single-phase supply voltage: 200…240 V 50/60 Hz								
ATV 61HU40M3 *(1)*	5	2	25	–	45	1	**VW3 A58501**	3.500
ATV 61HU55M3 *(1)*	5	1	45	–	50	1	**VW3 A58502**	3.500
ATV 61HU75M3 *(1)*	22	1	45	–	50	1	**VW3 A58502**	3.500
Three-phase supply voltage: 200…240 V 50/60 Hz								
ATV 61H075M3	5	10	4	–	45	1	**VW3 A4 551**	1.500
ATV 61HU15M3, HU22M3	5	4	10	–	65	1	**VW3 A4 552**	3.000
ATV 61HU30M3	5	2	16	–	75	1	**VW3 A4 553**	3.500
ATV 61HU40M3	5	1	30	–	90	1	**VW3 A4 554**	6.000
ATV 61HU55M3	22	1	30	–	90	1	**VW3 A4 554**	6.000
ATV 61HU75M3, HD11M3X	22	0.5	60	–	94	1	**VW3 A4 555**	11.000
ATV 61HD15M3X	22	0.3	100	–	260	1	**VW3 A4 556**	16.000
ATV 61HD18M3X…HD45M3X	22	0.15	230	–	400	1	**VW3 A4 557**	45.000
ATV 61HD55M3X	35	0.12	222	346	278	1	**VW3 A4 559**	35.000
ATV 61HD75M3X	35	0.085	300	474	315	1	**VW3 A4 568**	46.000
ATV 61HD90M3X	35	0.06	450	574	335	1	**VW3 A4 569**	70.000
Three-phase supply voltage: 380…480 V 50/60 Hz								
ATV 61H075N4, HU15N4 ATV 61W075N4, WU15N4 ATV 61W075N4C, WU15N4C	5	10	4	–	45	1	**VW3 A4 551**	1.500
ATV 61HU22N4…HU40N4 ATV 61WU22N4…WU40N4 ATV 61WU22N4C…WU40N4C	5	4	10	–	65	1	**VW3 A4 552**	3.000
ATV 61HU55N4, HU75N4 ATV 61WU55N4, WU75N4 ATV 61WU55N4C, WU75N4C	22	2	16	–	75	1	**VW3 A4 553**	3.500
ATV 61HD11N4, HD15N4 ATV 61WD11N4, WD15N4 ATV 61WD11N4C, WD15N4C	22	1	30	–	90	1	**VW3 A4 554**	6.000
ATV 61HD18N4, HD22N4 ATV 61WD18N4, WD22N4 ATV 61WD18N4C, WD22N4C	22	0.5	60	–	94	1	**VW3 A4 555**	11.000
ATV 61HD30N4…HD55N4 ATV 61WD30N4…WD55N4 ATV 61WD30N4C…WD55N4C	22	0.3	100	–	260	1	**VW3 A4 556**	16.000
ATV 61HD75N4 ATV 61WD75N4 ATV 61WD75N4C	22	0.15	230	–	400	1	**VW3 A4 557**	45.000
ATV 61HD90N4D ATV 61WD90N4 ATV 61WD90N4C	35	0.155	184	370	220	1	**VW3 A4 558**	31.000
ATV 61HC11N4D ATV 61QC11N4	35	0.12	222	445	278	1	**VW3 A4 559**	35.000
ATV 61HC13N4D ATV 61QC13N4	35	0.098	264	530	245	1	**VW3 A4 560**	43.000
ATV 61HC16N4D ATV 61QC16N4	50	0.085	300	570	315	1	**VW3 A4 568**	46.000
ATV 61HC22N4D ATV 61QC20N4	50	0.066	344	685	258	1	**VW3 A4 561**	47.000
ATV 61HC22N4D ATV 61HC25N4D ATV 61QC25N4	50	0.06	450	850	335	1	**VW3 A4 569**	70.000
ATV 61HC31N4D ATV 61QC31N4	50	0.038	613	1150	307	1	**VW3 A4 564**	73.000
ATV 61HC40N4D	50	0.032	720	1352	428	1	**VW3 A4 565**	82.000
ATV 61QC40N4	50	0.066	344	685	258	2	**VW3 A4 561**	47.000
ATV 61HC50N4D	50	0.06	450	850	335	2	**VW3 A4 569**	70.000
ATV 61QC50N4	50	0.038	509	855	278	2	**VW3 A4 563**	59.000
ATV 61HC63N4D	50	0.038	613	1150	307	2	**VW3 A4 564**	73.000
ATV 61QC63N4	50	0.026	590	1180	320	2	**VW3 A4 573**	60.000

(1) Use of a line choke is mandatory.

Variable speed drives
Altivar 61: reduction of current harmonics
Option: line chokes

PF 107532

VW3 A4 572

References (continued)

For drives	Line supply Line Isc	Line choke				Quantity per drive	THDI *(1)*	Reference	Weight
		Inductance value	Nominal current	Saturation current	Losses				
	kA	mH	A	A	W				kg
Three-phase supply voltage: 500…600 V 50/60 Hz									
ATV 61HU22S6X *(2)*	22	10	4	–	45	1	39.6	**VW3 A4 551**	1.500
ATV 61HU30S6X, HU40S6X *(2)*	22	4	10	–	65	1	48.1	**VW3 A4 552**	3.000
ATV 61HU55S6X *(2)*	22	4	10	–	65	1	41.6	**VW3 A4 552**	3.000
ATV 61HU75S6X *(2)*	22	2	16	–	75	1	52.3	**VW3 A4 553**	3.500
Three-phase supply voltage: 500…690 V 50/60 Hz									
ATV 61HU30Y *(2)*	22	10	4	–	45	1	38.03	**VW3 A4 551**	1.500
ATV 61HU40Y *(2)*	22	10	4	–	45	1	–		
ATV 61HU55Y *(2)*	22	10	4	–	45	1	42.79		
ATV 61HU75Y *(2)*	22	4	10	–	65	1	37.36	**VW3 A4 552**	3.000
ATV 61HD11Y *(2)*	22	4	10	–	65	1	41.81		
ATV 61HD15Y *(2)*	22	2	16	–	75	1	35.75	**VW3 A4 553**	3.500
ATV 61HD18Y *(2)*	22	2	16	–	75	1	38.44		
ATV 61HD22Y *(2)*	22	1	30	–	90	1	35.31	**VW3 A4 554**	6.000
ATV 61HD30Y *(2)*	22	1	30	–	90	1	37.61		
ATV 61HD37Y *(2)*	22	0.5	60	–	94	1	39.39	**VW3 A4 555**	11.000
ATV 61HD45Y *(2)*	22	0.5	60	–	94	1	36.07		
ATV 61HD55Y *(2)*	22	0.5	60	–	94	1	37.38		
ATV 61HD75Y *(2)*	22	0.3	100	–	260	1	37.39	**VW3 A4 556**	16.000
ATV 61HD90Y *(2)*	22	0.3	100	–	260	1	33.24		
ATV 61HC11Y *(3)*	28	0.22	160	320	220	1	43.31	**VW3 A4 570**	28.000
ATV 61HC13Y *(3)* ATV 61QC13Y	28	0.22	160	320	220	1	39.73	**VW3 A4 570**	28.000
ATV 61HC16Y *(3)* ATV 61QC16Y *(3)*	28	0.23	230	405	330	1	36.5	**VW3 A4 571**	79.000
ATV 61HC20Y *(3)* ATV 61QC20Y *(3)*	35	0.23	230	405	330	1	47.13	**VW3 A4 571**	79.000
ATV 61HC25Y *(3)* ATV 61QC25Y *(3)*	35	0.098	264	530	245	1	41.91	**VW3 A4 560**	35.000
ATV 61HC31Y *(3)* ATV 61QC31Y *(3)*	35	0.1	450	770	495	1	37.61	**VW3 A4 572**	90.000
ATV 61HC40Y *(3)* ATV 61QC40Y *(3)*	35	0.1	450	770	495	1	44.78		
ATV 61HC50Y *(3)* ATV 61QC50Y *(3)*	35	0.085	300	570	315	2	38.08	**VW3 A4 568**	46.000
ATV 61HC63Y *(3)* ATV 61QC63Y *(3)*	35	0.1	450	770	495	2	35.42	**VW3 A4 572**	90.000
ATV 61HC80Y *(3)* ATV 61QC80Y *(3)*	42	0.1	450	770	495	2	32.04	**VW3 A4 572**	90.000

(1) Total current harmonic distortion in accordance with IEC 61000-3-12. The values are given for a 600 V 60 Hz three-phase supply voltage.

(2) Use of a line choke is recommended.

(3) Use of a line choke is mandatory.

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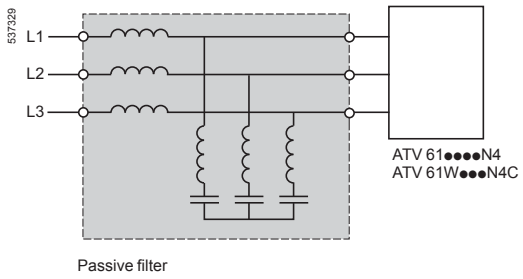
Variable speed drives
Altivar 61: reduction of current harmonics
Option: passive filters



Passive filter

Passive filters

A passive filter is used to reduce current harmonics with total harmonic distortion factors of less than 16% or 10%.

These performance levels can be improved still further and the harmonic distortion reduced to less than 10% or 5% if the filter is used with a DC choke (see pages 72 and 73).

The reactive power increases at no load or low load. To eliminate this reactive power, the filter capacitors can be disconnected via the drive (see the diagrams on our website “www.schneider-electric.com” or refer to our programming manual).

The degree of protection of the passive filters is IP 20.

ATV 61H●●●M3, ATV 61H●●●Y and ATV 61H●●●S6X drives are not compatible with the use of passive filters. It is recommended or mandatory, depending on the rating, to use a line choke (see page 74).

Applications

Reduction of current harmonics in order to use drives in the first environment (restricted distribution, for domestic use, sale conditional on the competence of the user and the distributor in terms of reduction of current harmonics).

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Variable speed drives
Altivar 61: reduction of current harmonics
Option: passive filters

Passive filters: 400 V 50 Hz three-phase power supply

Motor rating		For ATV 61 drives	Line supply Line current	Filter In (2)	Quantity per drive	Reference	Weight
kW	HP		A	A			kg
THDI 16% with ATV 61H075N4…HD75N4 drives (1)							
0.75	1	H075N4	2.5	6	1	**VW3 A4 601**	15.000
1.5	2	HU15N4	3.6	6	1	**VW3 A4 601**	15.000
2.2	3	HU22N4	5	6	1	**VW3 A4 601**	15.000
3	–	HU30N4	6	6	1	**VW3 A4 601**	15.000
4	5	HU40N4	7.8	10	1	**VW3 A4 602**	19.000
5.5	7.5	HU55N4	10	10	1	**VW3 A4 602**	19.000
7.5	10	HU75N4	14	19	1	**VW3 A4 603**	21.000
11	15	HD11N4	19	19	1	**VW3 A4 603**	21.000
15	20	HD15N4	26	26	1	**VW3 A4 604**	22.000
18.5	25	HD18N4	32	35	1	**VW3 A4 605**	34.000
22	30	HD22N4	38	43	1	**VW3 A4 606**	38.000
30	40	HD30N4	52	72	1	**VW3 A4 607**	56.000
37	50	HD37N4	63	72	1	**VW3 A4 607**	56.000
45	60	HD45N4	77	101	1	**VW3 A4 608**	69.000
55	75	HD55N4	91	101	1	**VW3 A4 608**	69.000
75	100	HD75N4	126	144	1	**VW3 A4 609**	97.000
THDI 10% with ATV 61HD90N4…HC63N4 and ATV 61W075N4…WD90N4(C) drives							
0.75	1	W075N4, W075N4C	2.5	6	1	**VW3 A4 601**	15.000
1.5	2	WU15N4, WU15N4C	3.6	6	1	**VW3 A4 601**	15.000
2.2	3	WU22N4, WU22N4C	5	6	1	**VW3 A4 601**	15.000
3	–	WU30N4, WU30N4C	6	6	1	**VW3 A4 601**	15.000
4	5	WU40N4, WU40N4C	7.8	10	1	**VW3 A4 602**	19.000
5.5	7.5	WU55N4, WU55N4C	10	10	1	**VW3 A4 602**	19.000
7.5	10	WU75N4, WU75N4C	14	19	1	**VW3 A4 603**	21.000
11	15	WD11N4, WD11N4C	19	19	1	**VW3 A4 603**	21.000
15	20	WD15N4, WD15N4C	26	26	1	**VW3 A4 604**	22.000
18.5	25	WD18N4, WD18N4C	32	35	1	**VW3 A4 605**	34.000
22	30	WD22N4, WD22N4C	38	43	1	**VW3 A4 606**	38.000
30	40	WD30N4, WD30N4C	52	72	1	**VW3 A4 607**	56.000
37	50	WD37N4, WD37N4C	63	72	1	**VW3 A4 607**	56.000
45	60	WD45N4, WD45N4C	77	101	1	**VW3 A4 608**	69.000
55	75	WD55N4, WD55N4C	91	101	1	**VW3 A4 608**	69.000
75	100	WD75N4, WD75N4C	126	144	1	**VW3 A4 609**	97.000
90	125	HD90N4 WD90N4, WD90N4C	149	144	1	**VW3 A4 609**	97.000
110	150	HC11N4	182	180	1	**VW3 A4 610**	103.000
132	200	HC13N4	218	216	1	**VW3 A4 611**	112.000
160	250	HC16N4	287	289	1	**VW3 A4 612**	135.000
200	300	HC22N4	353.5	370	1	**VW3 A4 613**	155.000
220	350	HC22N4	364	370	1	**VW3 A4 613**	155.000
250	400	HC25N4	415	216	2	**VW3 A4 611**	112.000
280	450	HC31N4	485	289	2	**VW3 A4 612**	135.000
315	500	HC31N4	543	289	2	**VW3 A4 612**	135.000
355	–	HC40N4	588	289	2	**VW3 A4 612**	135.000
400	600	HC40N4	664	325	2	**VW3 A4 619**	155.000
500	700	HC50N4	840	289	3	**VW3 A4 612**	135.000
560	800	HC63N4	978	370	3	**VW3 A4 613**	155.000
630	900	HC63N4	1091	370	3	**VW3 A4 613**	155.000

(1) If a DC choke (see page 72) is used with ATV 61H075N4…HD75N4 drives, a THDI of ≤ 10% is obtained. These reduced current harmonics are achieved as long as the total voltage harmonic distortion (THDU) is < 2%, the short-circuit ratio (RSCE) is > 66%, and only for the nominal current of the passive filter.

(2) In: nominal filter current.

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Variable speed drives
Altivar 61
Option: passive filters

Passive filters: 400 V 50 Hz three-phase power supply (continued)

Motor rating		For ATV 61 drives	Line supply Line current	Filter In (1)	Quantity per drive	Reference	Weight
kW	*HP*		A	A			kg
THDI 10% with ATV 61QC11N4…QC63N4 drives							
110	*150*	QC11N4	182	180	1	**VW3 A4 610**	103.000
132	*200*	QC13N4	218	216	1	**VW3 A4 611**	112.000
160	*250*	QC16N4	287	289	1	**VW3 A4 612**	135.000
200	*300*	QC20N4	353.5	370	1	**VW3 A4 613**	155.000
220	*350*	QC25N4	364	370	1	**VW3 A4 613**	155.000
250	*400*	QC25N4	415	216	2	**VW3 A4 611**	112.000
280	*450*	QC31N4	485	289	2	**VW3 A4 612**	135.000
315	*500*	QC31N4	543	289	2	**VW3 A4 612**	135.000
355	–	QC40N4	588	289	2	**VW3 A4 612**	135.000
400	*600*	QC40N4	664	325	2	**VW3 A4 619**	155.000
500	*700*	QC50N4	840	289	3	**VW3 A4 612**	135.000
560	*800*	QC63N4	978	370	3	**VW3 A4 613**	155.000
630	*900*	QC63N4	1091	370	3	**VW3 A4 613**	155.000

(1) In: Nominal filter current.

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Variable speed drives
Altivar 61: reduction of current harmonics
Option: passive filters

Passive filters: 400 V 50 Hz three-phase power supply (continued)

Motor rating		For ATV 61 drives	Line supply Line current	Filter In (2)	Quantity per drive	Reference	Weight
kW	HP		A	A			kg
THDI 10% with ATV 61H075N4…HD75N4 drives (1)							
0.75	1	H075N4	2.5	6	1	**VW3 A4 621**	21.000
1.5	2	HU15N4	3.6	6	1	**VW3 A4 621**	21.000
2.2	3	HU22N4	5	6	1	**VW3 A4 621**	21.000
3	–	HU30N4	6	6	1	**VW3 A4 621**	21.000
4	5	HU40N4	7.8	10	1	**VW3 A4 622**	27.000
5.5	7.5	HU55N4	10	10	1	**VW3 A4 622**	27.000
7.5	10	HU75N4	14	19	1	**VW3 A4 623**	28.000
11	15	HD11N4	19	19	1	**VW3 A4 623**	28.000
15	20	HD15N4	26	26	1	**VW3 A4 624**	40.000
18.5	25	HD18N4	32	35	1	**VW3 A4 625**	49.000
22	30	HD22N4	38	43	1	**VW3 A4 626**	52.000
30	40	HD30N4	52	72	1	**VW3 A4 627**	88.000
37	50	HD37N4	63	72	1	**VW3 A4 627**	88.000
45	60	HD45N4	77	101	1	**VW3 A4 628**	150.000
55	75	HD55N4	91	101	1	**VW3 A4 628**	150.000
75	100	HD75N4	126	144	1	**VW3 A4 629**	167.000
THDI 5% with ATV 61HD90N4…HC63N4 and ATV 61W075N4…WD90N4(C) drives (1)							
0.75	1	W075N4, W075N4C	2.5	6	1	**VW3 A4 621**	21.000
1.5	2	WU15N4, WU15N4C	3.6	6	1	**VW3 A4 621**	21.000
2.2	3	WU22N4, WU22N4C	5	6	1	**VW3 A4 621**	21.000
3	–	WU30N4, WU30N4C	6	6	1	**VW3 A4 621**	21.000
4	5	WU40N4, WU40N4C	7.8	10	1	**VW3 A4 622**	27.000
5.5	7.5	WU55N4, WU55N4C	10	10	1	**VW3 A4 622**	27.000
7.5	10	WU75N4, WU75N4C	14	19	1	**VW3 A4 623**	28.000
11	15	WD11N4, WD11N4C	19	19	1	**VW3 A4 623**	28.000
15	20	WD15N4, WD15N4C	26	26	1	**VW3 A4 624**	40.000
18.5	25	WD18N4, WD18N4C	32	35	1	**VW3 A4 625**	49.000
22	30	WD22N4, WD22N4C	38	43	1	**VW3 A4 626**	52.000
30	40	WD30N4, WD30N4C	52	72	1	**VW3 A4 627**	88.000
37	50	WD37N4, WD37N4C	63	72	1	**VW3 A4 627**	88.000
45	60	WD45N4, WD45N4C	77	101	1	**VW3 A4 628**	150.000
55	75	WD55N4, WD55N4C	91	101	1	**VW3 A4 628**	150.000
75	100	WD75N4, WD75N4C	126	144	1	**VW3 A4 629**	167.000
90	125	HD90N4 WD90N4, WD90N4C	149	144	1	**VW3 A4 629**	167.000
110	150	HC11N4	182	180	1	**VW3 A4 630**	178.000
132	200	HC13N4	218	216	1	**VW3 A4 631**	224.000
160	250	HC16N4	287	289	1	**VW3 A4 632**	271.000
200	300	HC22N4	353.5	370	1	**VW3 A4 633**	320.000
220	350	HC22N4	364	370	1	**VW3 A4 633**	320.000
250	400	HC25N4	415	216	2	**VW3 A4 631**	224.000
280	450	HC31N4	485	289	2	**VW3 A4 632**	271.000
315	500	HC31N4	543	289	2	**VW3 A4 632**	271.000
355	–	HC40N4	588	289	2	**VW3 A4 632**	271.000
400	600	HC40N4	664	325	2	**VW3 A4 639**	284.000
500	700	HC50N4	840	289	3	**VW3 A4 632**	271.000
560	800	HC63N4	918	370	3	**VW3 A4 633**	320.000
630	900	HC63N4	1091	370	3	**VW3 A4 633**	320.000

(1) If a DC choke (see page 72) is used with ATV 61H075N4…HD75N4 drives, a THDI of ≤ 5% is obtained.
These reduced current harmonics are achieved as long as the total voltage harmonic distortion (THDU) is < 2%, the short-circuit ratio (RSCE) is > 66%, and only for the nominal current of the passive filter.
(2) In: nominal filter current.

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Variable speed drives
Altivar 61
Option: passive filters

Passive filters: 400 V 50 Hz three-phase power supply (continued)

Motor rating		For ATV 61 drives	Line supply Line current	Filter In (1)	Quantity per drive	Reference	Weight
kW	*HP*		A	A			kg
THDI 5% with ATV 61QC11N4…QC63N4 drives							
110	*150*	QC11N4	182	180	1	**VW3 A4 630**	178.000
132	*200*	QC13N4	218	216	1	**VW3 A4 631**	224.000
160	*250*	QC16N4	287	289	1	**VW3 A4 632**	271.000
200	*300*	QC20N4	353.5	370	1	**VW3 A4 633**	320.000
220	*350*	QC25N4	364	370	1	**VW3 A4 633**	320.000
250	*400*	QC25N4	415	216	2	**VW3 A4 631**	224.000
280	*450*	QC31N4	485	289	2	**VW3 A4 632**	271.000
315	*500*	QC31N4	543	289	2	**VW3 A4 632**	271.000
355	–	QC40N4	588	289	2	**VW3 A4 632**	271.000
400	*600*	QC40N4	664	325	2	**VW3 A4 639**	284.000
500	*700*	QC50N4	840	289	3	**VW3 A4 632**	271.000
560	*800*	QC63N4	918	370	3	**VW3 A4 633**	320.000
630	*900*	QC63N4	1091	370	3	**VW3 A4 633**	320.000

(1) In: Nominal filter current.

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Variable speed drives
Altivar 61: reduction of current harmonics
Option: Active Front End

Active Front End
+
ATV 61HC11N4D

Active Front End
+
ATV 61HD22N4 + ATV 61HU22N4

Presentation

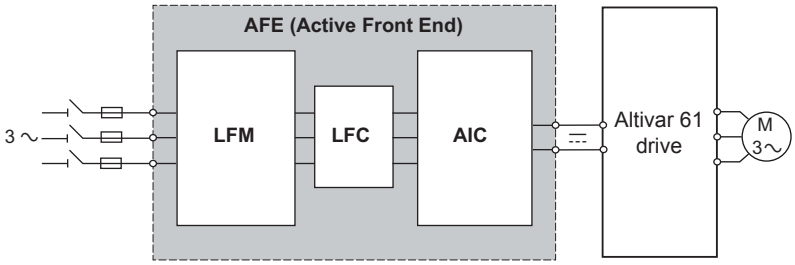
The Active Front End allows the Altivar 61 drive to be used in applications requiring a particularly low harmonic level (THDI < 4%).
It complies with standard IEEE 519-1992.

It is available for a range of drives between 0.75 kW and 800 kW with three types of 50/60 Hz power supply:
380…440 V three-phase
480 V three-phase
500…690 V three-phase
It has been developed to comply with European directives and to obtain CE marking.

Apart from the possibility of significantly reducing the level of harmonics, this technology offers several benefits:
- Increased application dynamics
- Operation on unstable line supplies
- Amplification of the input voltage
- Reduced EMC emissions

The Active Front End consists of a set of three modules installed upstream of the drive between the line supply and the motor.
It is made up of the following elements:
A **line filter module (LFM)** 1, used at the input, incorporating:
A charging circuit
A line contactor
An EMC filter
A **line filter choke (LFC)** 2, consisting of three single-phase chokes, connected between the line filter module (LFM) and the active infeed converter (AIC)
An **active infeed converter (AIC)** 3

The Active Front End allows the Altivar 61 drive to be powered via the common DC bus, while limiting the total current distortion factor (THDI) to less than 4%.
It can also supply direct current to several drives of different power ratings, operating in parallel, should the installation require this.



The Active Front End offers IP 00 protection. The ambient air temperature during operation must be between - 10°C and + 45°C (without derating, + 60°C with derating).

It is imperative that the protection of the Active Front End on the line supply side is supplemented by fuses for semi-conductors (to protect against short-circuits or a system failure).
The DC bus output only requires fuse protection if Active Front End modules are used in parallel.

Applications

Applications requiring a very low harmonic level
Applications with high inertia and strong dynamics
Applications on unstable line supplies

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Variable speed drives
Altivar 61: reduction of current harmonics
Option: Active Front End

References

For drives	Motor	Line supply	DC bus		Active Front End (1) (2)	Quantity per drive	Reference	Weight
	Power indicated on rating plate	Nominal line current 400 V	Maximum current	Continuous power 400 V				
	kW	A	A	kW				kg
Three-phase supply voltage: 380…440 V 50/60 Hz								
ATV 61H075N4… HD90N4	0.75…90	177	185	120	AIC	1	**VW3 A7 250**	60.000
					LFC	1	**VW3 A7 265**	54.000
					LFM	1	**VW3 A7 260**	60.000
ATV 61HC11N4D	110	177	185	120	AIC	1	**VW3 A7 250**	60.000
					LFC	1	**VW3 A7 265**	54.000
					LFM	1	**VW3 A7 260**	60.000
ATV 61HC13N4D	132	212	220	143	AIC	1	**VW3 A7 251**	74.000
					LFC	1	**VW3 A7 266**	69.000
					LFM	1	**VW3 A7 261**	80.000
ATV 61HC16N4D	160	255	265	172	AIC	1	**VW3 A7 252**	80.000
					LFC	1	**VW3 A7 266**	69.000
					LFM	1	**VW3 A7 261**	80.000
ATV 61HC22N4D	220	348	366	238	AIC	1	**VW3 A7 253**	110.000
					LFC	1	**VW3 A7 267**	132.000
					LFM	1	**VW3 A7 262**	125.000
ATV 61HC25N4D	250	395	412	268	AIC	1	**VW3 A7 254**	140.000
					LFC	1	**VW3 A7 267**	132.000
					LFM	1	**VW3 A7 262**	125.000
ATV 61H31N4D	315	495	517	336	AIC	1	**VW3 A7 255**	140.000
					LFC	1	**VW3 A7 267**	132.000
					LFM	1	**VW3 A7 262**	125.000
ATV 61HC40N4D	400	628	654	425	AIC	1	**VW3 A7 256**	215.000
					LFC	2	**VW3 A7 267**	132.000
					LFM	2	**VW3 A7 262**	125.000
ATV 61HC50N4D	500	780	815	530	AIC	1	**VW3 A7 257**	225.000
					LFC	2	**VW3 A7 267**	132.000
					LFM	2	**VW3 A7 262**	125.000
ATV 61HC63N4D	630	980	1023	665	AIC	1	**VW3 A7 258**	300.000
					LFC	2	**VW3 A7 267**	132.000
					LFM	2	**VW3 A7 262**	125.000

Dimensions (overall)

Active infeed converter (AIC)	W x H x D mm
VW3 A7 250	310 x 680 x 377
VW3 A7 251	350 x 782 x 377
VW3 A7 252	330 x 950 x 377
VW3 A7 253	430 x 950 x 377
VW3 A7 254	585 x 950 x 377
VW3 A7 255	585 x 950 x 377
VW3 A7 256	880 x 1150 x 377
VW3 A7 257	880 x 1150 x 377
VW3 A7 258	1110 x 1150 x 377

Line filter choke (LFC)	W x H x D mm
VW3 A7 265	835 x 210 x 185
VW3 A7 266	835 x 295 x 195
VW3 A7 267	1270 x 360 x 255

Line filter module (LFM)	W x H x D mm
VW3 A7 260	240 x 630 x 377
VW3 A7 261	290 x 730 x 377
VW3 A7 262	290 x 1100 x 377

(1) For more information about the Active Front End, please refer to the programming manual or visit our website www.schneider-electric.com.
(2) AIC = active infeed converter; LFC = line filter choke; LFM = line filter module.

Variable speed drives
Altivar 61: reduction of current harmonics
Option: Active Front End

References

For drives	Motor	Line supply	DC bus		Active Front End *(1) (2)*	Quantity per drive	Reference	Weight
	Power indicated on rating plate	Nominal line current 480 V	Maximum current	Continuous power 480 V				
	HP	A	A	kW				kg
Three-phase supply voltage: 480 V 50/60 Hz								
ATV 61H075N4… HD90N4	*1…125*	177	185	120	AIC	1	**VW3 A7 250**	60.000
					LFC	1	**VW3 A7 265**	54.000
					LFM	1	**VW3 A7 260**	60.000
ATV 61HC11N4D	*150*	177	185	120	AIC	1	**VW3 A7 250**	60.000
					LFC	1	**VW3 A7 265**	54.000
					LFM	1	**VW3 A7 260**	60.000
ATV 61HC13N4D	*200*	212	220	143	AIC	1	**VW3 A7 251**	74.000
					LFC	1	**VW3 A7 266**	69.000
					LFM	1	**VW3 A7 261**	80.000
ATV 61HC16N4D	*250*	265	265	172	AIC	1	**VW3 A7 252**	80.000
					LFC	1	**VW3 A7 266**	69.000
					LFM	1	**VW3 A7 261**	80.000
ATV 61HC22N4D	*350*	348	366	238	AIC	1	**VW3 A7 283**	110.000
					LFC	1	**VW3 A7 267**	132.000
					LFM	1	**VW3 A7 262**	125.000
ATV 61HC25N4D	*400*	395	412	268	AIC	1	**VW3 A7 254**	140.000
					LFC	1	**VW3 A7 267**	132.000
					LFM	1	**VW3 A7 262**	125.000
ATV 61H31N4D	*500*	495	517	336	AIC	1	**VW3 A7 255**	140.000
					LFC	1	**VW3 A7 267**	132.000
					LFM	1	**VW3 A7 262**	125.000
ATV 61HC40N4D	*600*	628	654	425	AIC	1	**VW3 A7 286**	215.000
					LFC	2	**VW3 A7 267**	132.000
					LFM	2	**VW3 A7 262**	125.000
ATV 61HC50N4D	*700*	780	815	530	AIC	1	**VW3 A7 287**	225.000
					LFC	2	**VW3 A7 267**	132.000
					LFM	2	**VW3 A7 262**	125.000
ATV 61HC63N4D	*900*	980	1023	665	AIC	1	**VW3 A7 258**	300.000
					LFC	2	**VW3 A7 267**	132.000
					LFM	2	**VW3 A7 262**	125.000

Dimensions (overall)

Active infeed converter (AIC)	**W x H x D mm**
VW3 A7 250	310 x 680 x 377
VW3 A7 251	350 x 782 x 377
VW3 A7 252	330 x 950 x 377
VW3 A7 283	585 x 950 x 377
VW3 A7 254	585 x 950 x 377
VW3 A7 255	585 x 950 x 377
VW3 A7 286	1110 x 1150 x 377
VW3 A7 287	1110 x 1150 x 377
VW3 A7 258	1110 x 1150 x 377

Line filter choke (LFC)	**W x H x D mm**
VW3 A7 265	835 x 210 x 185
VW3 A7 266	835 x 295 x 195
VW3 A7 267	1270 x 360 x 255

Line filter module (LFM)	**W x H x D mm**
VW3 A7 260	240 x 630 x 377
VW3 A7 261	290 x 730 x 377
VW3 A7 262	290 x 1100 x 377

(1) For more information about the Active Front End, please refer to the programming manual or visit our website www.schneider-electric.com.
(2) AIC = active infeed converter; LFC = line filter choke; LFM = line filter module.

Variable speed drives
Altivar 61: reduction of current harmonics
Option: Active Front End

References

For drives	Motor	Line supply	DC bus				Active Front End *(1) (2)*	Quantity per drive	Reference	Weight
	Power indicated on rating plate	Maximum nominal line current	Maximum current	Continuous power						
		500 V…690 V		500 V	600 V	690 V				
	kW	A	A	kW	kW	kW				kg
Three-phase supply voltage: 500…690 V 50/60 Hz										
ATV 61HC11Y	110	120	130	102	123	142	AIC	1	**VW3 A7 270**	110.000
							LFC	1	**VW3 A7 268**	99.000
							LFM	1	**VW3 A7 263**	80.000
ATV 61HC13Y	132	120	130	102	123	142	AIC	1	**VW3 A7 270**	110.000
							LFC	1	**VW3 A7 268**	99.000
							LFM	1	**VW3 A7 263**	80.000
ATV 61HC16Y	160	150	156	127	153	172	AIC	1	**VW3 A7 271**	110.000
							LFC	1	**VW3 A7 268**	99.000
							LFM	1	**VW3 A7 263**	80.000
ATV 61HC20Y	200	185	195	157	188	215	AIC	1	**VW3 A7 272**	110.000
							LFC	1	**VW3 A7 268**	99.000
							LFM	1	**VW3 A7 263**	80.000
ATV 61HC25Y	250	228	244	193	230	268	AIC	1	**VW3 A7 273**	190.000
							LFC	1	**VW3 A7 269**	210.000
							LFM	1	**VW3 A7 264**	125.000
ATV 61HC31Y	315	285	305	242	290	335	AIC	1	**VW3 A7 274**	190.000
							LFC	1	**VW3 A7 269**	210.000
							LFM	1	**VW3 A7 264**	125.000
ATV 61HC40Y	400	360	386	305	365	424	AIC	1	**VW3 A7 275**	190.000
							LFC	1	**VW3 A7 269**	210.000
							LFM	1	**VW3 A7 264**	125.000
ATV 61HC50Y	500	450	481	382	460	528	AIC	1	**VW3 A7 276**	400.000
							LFC	2	**VW3 A7 269**	210.000
							LFM	2	**VW3 A7 264**	125.000
ATV 61HC63Y	630	563	604	478	575	663	AIC	1	**VW3 A7 277**	400.000
							LFC	2	**VW3 A7 269**	210.000
							LFM	2	**VW3 A7 264**	125.000
ATV 61HC80Y	800	715	765	607	730	842	AIC	1	**VW3 A7 278**	400.000
							LFC	2	**VW3 A7 269**	210.000
							LFM	2	**VW3 A7 264**	125.000

Dimensions (overall)

Active infeed converter (AIC)	W x H x D mm
VW3 A7 270	330 x 1190 x 377
VW3 A7 271	330 x 1190 x 377
VW3 A7 272	330 x 1190 x 377
VW3 A7 273	585 x 1190 x 377
VW3 A7 274	585 x 1190 x 377
VW3 A7 275	585 x 1190 x 377
VW3 A7 276	1110 x 1390 x 377
VW3 A7 277	1110 x 1390 x 377
VW3 A7 278	1110 x 1390 x 377

Line filter choke (LFC)	W x H x D mm
VW3 A7 268	835 x 295 x 210
VW3 A7 269	985 x 540 x 250

Line filter module (LFM)	W x H x D mm
VW3 A7 263	290 x 730 x 377
VW3 A7 264	290 x 1100 x 397

(1) For more information about the Active Front End, please refer to the programming manual or visit our website www.schneider-electric.com.
(2) AIC = active infeed converter; LFC = line filter choke; LFM = line filter module.

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