

Altivar 212 variable speed drives

for 3-phase asynchronous motors from 0.75 to 75 kW

Catalogue

March 2011



PF105302



Ventilation application

L_000060



Air conditioning application

PF02892



Pumping application

Presentation

The Altivar 212 drive is a frequency inverter for 0.75 kW to 75 kW three-phase asynchronous motors.

It has been designed for the most common fluid management applications (HVAC "Heating, Ventilation and Air Conditioning") in buildings the service sector:

- Ventilation
- Heating and air conditioning
- Pumping

Its design is based on eco-energy with a reduction in energy consumption of up to 70% compared to a conventional control system.

It is eco-friendly and complies with directives such as RoHS, WEEE, etc. relating to environmental protection.

The Altivar 212 is operational from the moment the power is turned on; it can be used to achieve your building's maximum energy efficiency (see the "Energy gain" curve on the previous pages).

Optimisation of building management

The Altivar 212 drive has been designed to considerably improve building management by:

- Simplifying circuits by removing flow control valves and dampers,
- Offering flexibility and ease of adjustment for installations, thanks to its compatibility with building management system connectivity
- Reducing noise pollution (noise caused by air flow and motor)

Its various standard versions make it possible to reduce installation costs by integrating EMC filters, categories C1 to C3 depending on the model, which has the following advantages:

- More compact size
- Simplified wiring, thus reduced cost

The Altivar 212 offer helps to reduce equipment costs while optimizing its performance.

Compliance with international standards and certifications

The Altivar 212 offer has been designed to conform to the strictest international standards and in accordance with recommendations relating to electrical industrial control devices, including the Low Voltage Directive and IEC/EN 61800-5-1.

It takes into account observing requirements in respect of electromagnetic compatibility and conforms to international standard IEC/EN 61800-3 (immunity and conducted and radiated EMC emissions).

The entire range has obtained CE marking according to the European Low Voltage (2006/95/EC) and EMC (2004/108/EC) Directives.

The range is UL, CSA, C-Tick and NOM certified.

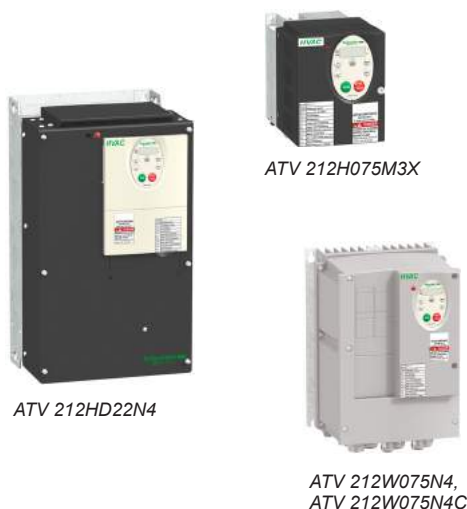
Flexible communication adapted to building management

The Altivar 212 drive can easily be adapted to all building management systems thanks to its numerous functions and communication protocols integrated as standard: Modbus, METASYS N2®, APOGEE FLN P1® and BACnet®.

With protocols offered as standard and the LonWorks® communication card offered as an option, the Altivar 212 drive is optimized for the building market (HVAC).

Quick and easy dialogue to make your installations easier to use

Numerous dialogue and configuration tools are also included in the Altivar 212 offer, making running installations quick, easy and cost-effective (see page 15).



An offer dedicated to HVAC (Heating, Ventilation and Air Conditioning)

The Altivar 212 range of variable speed drives extends across a range of motor power ratings from 0.75 kW to 75 kW with the following types of power supply:

- 200...240 V three-phase, 0.75 kW to 30 kW, IP 21 (**ATV 212H●●●M3X**)
- 380...480 V three-phase, 0.75 kW to 75 kW, IP 21 (**ATV 212H●●●N4**)
- 380...480 V three-phase, 0.75 kW to 75 kW, UL Type 12/IP 55 (**ATV 212W●●●N4** and **ATV 212W●●●N4C**)

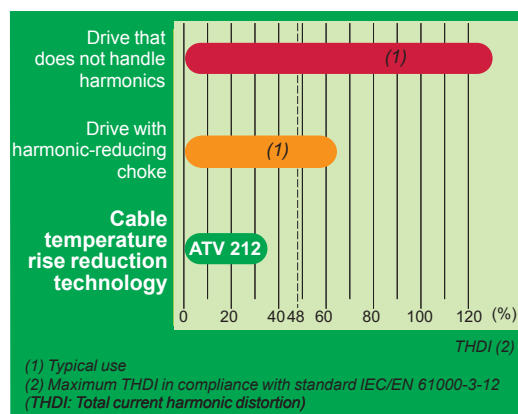
Altivar 212 drives are compact IP 21 or UL Type 12/IP 55 products which meet electromagnetic compatibility requirements and reduce current harmonics, causing minimal temperature rise in the cables.

Compliance with electromagnetic compatibility (EMC) requirements for the protection of equipment

The built-in EMC filters in **ATV 212●●●N4** and **ATV 212W●●●N4C** drives and compliance with EMC requirements simplify installation and provide a very economical means of ensuring devices meet the criteria to receive the CE mark.

The EMC filters can be used to meet the requirements of the IEC/EN 61800-3, category C2 or C3 for **ATV 212●●●N4**, category C1 for **ATV 212W●●●N4C**.

ATV 212H●●●M3X drives have been designed without an EMC filter. Filters are available as an option and can be installed by the user to reduce emission levels (see pages 22 and 23).



An innovative technology for managing current harmonics: cable temperature rise reduction technology

Innovative technology for managing harmonics

Thanks to its cable temperature rise reduction technology, the Altivar 212 drive offers immediate, disturbance-free operation. This technology avoids having to resort to additional options such as a line choke or DC choke to deal with current harmonics.

This makes it possible to obtain a THDI (1) of less than 35%, a much lower value than the 48% level of THDI imposed by standard IEC/EN 61000-3-12.

With the Altivar 212 range, you avoid the cost of adding a line choke or DC choke, you reduce the time spent on wiring, you optimize the enclosure size and you reduce the losses.

This technology can also triple the service life of the DC capacitors.

Better management of motor disturbance

The Altivar 212 offers optional motor chokes which can increase the maximum cable lengths between the drive and the motor and limit disturbance at the motor terminals.

Special features

Description	Performance
Degree of protection conforming to IEC/EN 61800-5-1 & IEC/EN 60529	ATV 212H●●●M3X and ATV 212H●●●N4 drives: IP 21 & IP 41 on upper part IP 20 without blanking plate on upper part of cover UL Type 1 with the VW3 A31 81● or VW3 A9 20● kit, see page 18 ATV 212W●●●N4 and ATV 212W●●●N4C drives: UL Type 12/IP 55
Ambient air temperature around the device	ATV 212H●●●M3X and ATV 212H●●●N4 drives: - 10...+ 50°C without derating, + 60°C with derating (2) ATV 212W●●●N4 and ATV 212W●●●N4C drives: - 10...+ 40°C without derating, + 50°C with derating (2)
Environmental conditions	Conforming to IEC 60721-3-3 classes 3C1 and 3S2
Analog inputs	■ 1 switch-configurable current or voltage analog input which is configurable as a logic input ■ 1 voltage analog input, configurable as an analog input or as a PTC probe input
Analog output	1 switch-configurable current or voltage output
Logic inputs	■ Three 24 V $\overline{\text{N/C}}$ programmable logic inputs, compatible with level 1 PLC, IEC/EN 61131-2 standard ■ 1 positive logic input (Source) ■ 1 negative logic input (Sink)
Configurable relay logic outputs	■ 1 output, one "N/C" contact and one "N/O" contact with common point ■ 1 output, one "N/O" contact

(1) THDI: Total current harmonic distortion

(2) View the derating curves on our website: www.schneider-electric.com.



Example of an application requiring the use of dedicated building functions

Integrated functions for simplified use of buildings

Due to its numerous integrated functions, the Altivar 212 drive gets building applications up and running immediately, while ensuring the reliability of equipment with its protection functions.

Dedicated functions for ventilation applications

- Noise reduction due to the switching frequency, which is adjustable up to 16 kHz during operation
- Automatic catching of a spinning load with speed detection
- Adaptation of current limiting according to speed
- Reference calibration and limitation
- Continuity of service is assured by means of the forced operation function with configurable fault inhibition, direction of operation and references.

Protection functions

- Smoke extraction system (forced operation with fault inhibition)
- Damper control with motor stopping if the ventilation shutters are closed
- Machine protection via skip frequency function (resonance suppression).

Dedicated functions for pumping applications

- Sleep/wake-up

Protection functions

- Protection against overloads and overcurrents in continuous operation (pump jamming)
- Machine mechanical protection with control of operating direction
- Protection of the installation by means of underload and overload detection

Universal functions designed specifically for building applications

- Energy saving ratio
- Auto-tuning
- Integrated PID regulator with preset references and automatic/manual ("Auto/Man.") mode
- Automatic ramp adaptation, ramp switching, ramp profile
- Switching between sets of motor rating data (Multimotor)
- Switching of command channels (references and run command) using the LOC/REM key
- Preset speeds
- Monitoring, measurement of energy consumption
- Electricity and service hours meter

Protection functions

- Motor and drive thermal protection, via a built-in PTC thermistor probe
- Protection via management of multiple faults and configurable alarms

PF100821



Side-by-side mounting of Altivar 212 drives

Easy and inexpensive to mount, appropriate to each application

The compact nature of the Altivar 212 range simplifies installation and reduces costs by optimizing the size of enclosures (whether floor-standing or wall-mounted).

Altivar 212 drives can be mounted in a variety of ways to adapt to the needs of an installation. They can be mounted side by side, and can also be wall-mounted in compliance with UL Type 1 requirements using kits **VW3 A31 81●** and **VW3 A9 20●** (see page 18).

They are designed to operate in an enclosure at an ambient temperature of + 40°C or + 50°C depending on the model, without derating, or from + 50°C or + 60°C depending on the model, with derating.

Please refer to the mounting recommendations on our website:
www.schneider-electric.com.

Numerous dialogue and configuration tools

The Altivar 212 range offers a wide range of dialogue and configuration tools that make it quick, easy and cost-effective to run installations.

Drive Navigator 3

The Altivar 212 drive **1** has a remote graphic display terminal (Drive Navigator), common to all Schneider Electric's variable speed drive ranges.

This terminal is very user-friendly when performing startup and maintenance operations thanks to its full-text screen, online help screens and text in the user's language (6 factory-installed languages available).

It can be remotely mounted on an enclosure door with IP 54 or IP 65 degree of protection. See page 19.

PCSoft software workshop

The PCSoft software workshop integrates configuration, setup and maintenance functions. It connects directly to the Modbus port on the drive. See page 18.

SoMove Mobile software 2

SoMove Mobile software is a mobile phone application. It can be used to edit the Altivar 212 drive parameters from a mobile phone, save configurations, import them from a PC and export them to a PC.

It can be used with the door closed thanks to the Bluetooth® interface. See page 20.

Multi-Loader configuration tool 4

The Multi-Loader tool enables configurations to be copied from a PC or a drive and duplicated on another drive. The Altivar 212 drives must be powered-up. See page 20.

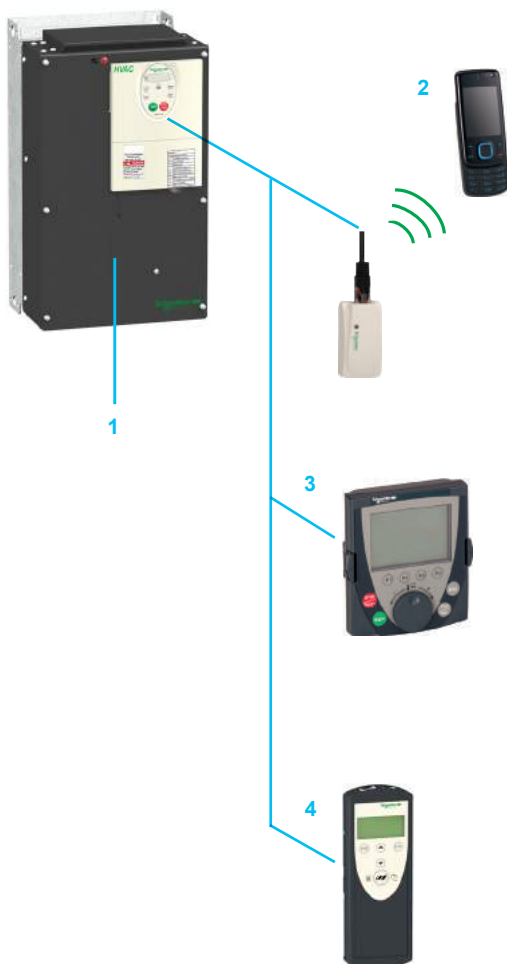
Quick menu tool

The Altivar 212 drive offers a quick setup function in the form of its Quick menu, which includes the 10 key installation parameters (acceleration, deceleration, motor parameters, etc.).

A documented offer

The Altivar 212 range is also presented on a DVD-ROM which includes all the Schneider Electric documentation on variable speed drives and soft start/soft stop units.

The DVD-ROM includes the technical documentation (programming manuals, installation manuals, quick reference guides), brochures and catalogues. See page 20.



Example of dialogue and configuration tools associated with the Altivar 212 range



ATV 212H075M3X
EMC plate not mounted



ATV 212HD15N4
EMC plate not mounted



ATV 212HD55N4
EMC plate not mounted

IP 21 drives (frequency range from 0.5 to 200 Hz)										
Motor Power indicated on rating plate	Line supply				Altivar 212					
	Line current (1)	Apparent power		Maximum prospective line Isc	Max. continu- ous output current (In) (2)	Maximum transient current for 60 s	Dissipated power at maximum output current	THDI (3)	Reference	Weight
		200 V	240 V							
kW	HP	A	A	kVA	kA	A	A	W	%	kg
Three-phase supply voltage: 200...240 V 50/60 Hz, without EMC filter (4)										
0.75	1	3.3	2.7	1.1	5	4.6	5.1	63	31.3	ATV 212H075M3X 1.800
1.5	2	6.1	5.1	2.1	5	7.5	8.3	101	31.6	ATV 212HU15M3X 1.800
2.2	3	8.7	7.3	3	5	10.6	11.7	120	30.7	ATV 212HU22M3X 1.800
3	—	—	10	4.2	5	13.7	15.1	146	32.4	ATV 212HU30M3X 3.050
4	5	14.6	13	5.4	5	18.7	19.3	193	31.1	ATV 212HU40M3X 3.050
5.5	7.5	20.8	17.3	7.2	22	24.2	26.6	249	30.7	ATV 212HU55M3X 6.100
7.5	10	27.9	23.3	9.7	22	32	35.2	346	30.8	ATV 212HU75M3X 6.100
11	15	42.1	34.4	14.3	22	46.2	50.8	459	35.5	ATV 212HD11M3X 11.550
15	20	56.1	45.5	18.9	22	61	67.1	629	33.3	ATV 212HD15M3X 11.550
18.5	25	67.3	55.8	23.2	22	74.8	82.3	698	32	ATV 212HD18M3X 11.550
22	30	80.4	66.4	27.6	22	88	96.8	763	35	ATV 212HD22M3X 27.400
30	40	113.3	89.5	37.2	22	117	128.7	1085	32.1	ATV 212HD30M3X 38.650
Motor Power indicated on rating plate	Line supply				Altivar 212					
	Max. line current (1)	Apparent power		Maximum prospective line Isc	Max. continu- ous output current (In) (2)	Maximum transient current for 60 s	Dissipated power at maximum output current	THDI (3)	Reference	Weight
		380 V	480 V							
kW	HP	A	A	kVA	kA	A	A	W	%	kg
Three-phase supply voltage: 380...480 V 50/60 Hz, with integrated category C2 or C3 EMC filter (4)										
0.75	1	1.7	1.4	1.1	5	2.2	2.4	55	32.8	ATV 212H075N4 2.000
1.5	2	3.2	2.5	2.1	5	3.7	4	78	30.9	ATV 212HU15N4 2.000
2.2	3	4.6	3.6	3	5	5.1	5.6	103	30.5	ATV 212HU22N4 2.000
3	—	6.2	4.9	4.1	5	7.2	7.9	137	31.2	ATV 212HU30N4 3.350
4	5	8.1	6.4	5.3	5	9.1	10	176	30.6	ATV 212HU40N4 3.350
5.5	7.5	10.9	8.6	7.2	22	12	13.2	215	30.5	ATV 212HU55N4 3.350
7.5	10	14.7	11.7	9.7	22	16	17.6	291	30.9	ATV 212HU75N4 6.450
11	15	21.1	16.8	13.9	22	22.5	24.8	430	30.4	ATV 212HD11N4 6.450
15	20	28.5	22.8	18.7	22	30.5	33.6	625	30.9	ATV 212HD15N4 11.650
18.5	25	34.8	27.8	22.9	22	37	40.7	603	30.5	ATV 212HD18N4 11.650
22	30	41.1	32.6	27.3	22	43.5	47.9	723	31.9	ATV 212HD22N4S 11.650
22	30	41.6	33.1	27.3	22	43.5	47.9	626	30.7	ATV 212HD22N4 26.400
30	40	56.7	44.7	37.3	22	58.5	64.4	847	30	ATV 212HD30N4 26.400
37	50	68.9	54.4	45.3	22	79	86.9	976	30.3	ATV 212HD37N4 38.100
45	60	83.8	65.9	55.2	22	94	103.4	1253	30.2	ATV 212HD45N4 38.100
55	75	102.7	89	67.6	22	116	127.6	1455	32.7	ATV 212HD55N4 55.400
75	100	141.8	111.3	93.3	22	160	176	1945	31.1	ATV 212HD75N4 55.400

Dimensions (overall)

Drives (5)		W x H x D	
		EMC plate mounted	EMC plate not mounted
ATV 212H●●●M3X	ATV 212H●●●N4	mm	mm
ATV 212075M3X...U22M3X	ATV 212075N4...U22N4	107 x 192 x 150	107 x 143 x 150
ATV 212U30M3X, U40M3X	ATV 212U30N4...U55N4	142 x 232 x 150	142 x 184 x 150
ATV 212U55M3X, U75M3X	ATV 212U75N4, D11N4	180 x 307 x 170	180 x 232 x 170
ATV 212D11M3X...D18M3X	ATV 212D15N4...D22N4S	245 x 405 x 190	245 x 330 x 190
ATV 212D22M3X	ATV 212D22N4, D30N4	240 x 542 x 214	240 x 420 x 214
—	ATV 212D37N4, D45N4	240 x 663 x 244	240 x 550 x 244
ATV 212D30M3X	ATV 212D55N4, D75N4	320 x 723 x 290	320 x 605 x 290

(1) Typical value for the indicated motor power and for the maximum prospective line Isc.

(2) These values are given for a nominal switching frequency of 12 kHz up to ATV 212HD15M3X and up to ATV 212HD15N4 or 8 kHz for ATV 212HD18M3X...HD30M3X and ATV 212HD18N4...HD75N4, for use in continuous operation. The switching frequency can be set between 6 and 16 kHz for all ratings. Above 8 kHz or 12 kHz, depending on the rating, the drive will reduce the switching frequency automatically in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current. The nominal motor current must not exceed this derating value. See the derating curves on our website www.schneider-electric.com.

(3) Total current harmonic distortion in accordance with IEC/EN 61000-3-12.

(4) Drives are supplied with an EMC plate, for customer assembly.

(5) Value given at 380 V (IEC)/460 V (NEC).

▲ Marketed 2nd half 2011



ATV 212W075N4

ATV 212WD22N4,
ATV 212WD22N4C

UL Type 12/IP 55 drives (frequency range from 0.5 to 200 Hz)

Motor		Line supply				Altivar 212					
Power indicated on rating plate		Line current (1)		Apparent power	Maximum prospective line Isc	Max. continuous output current (In) (2)	Maximum transient current for 60 s	THDI (3)	Reference	Weight	
		380 V	480 V	380 V		380/460 V (IEC/NEC)					
	kW	HP	A	A		kVA	kA	A			A
Three-phase supply voltage: 380...480 V 50/60 Hz, with integrated category C2 or C3 EMC filter											
0.75	1	1.7	1.4	1.1	5	2.2	2.4	32.8	ATV 212W075N4	7.000	
1.5	2	3.2	2.5	2.1	5	3.7	4	30.9	ATV 212WU15N4	7.000	
2.2	3	4.6	3.6	3	5	5.1	5.6	30.5	ATV 212WU22N4	7.000	
3	—	6.2	4.9	4.1	5	7.2	7.9	31.2	ATV 212WU30N4	9.650	
4	5	8.1	6.4	5.3	5	9.1	10	30.6	ATV 212WU40N4	9.650	
5.5	7.5	10.9	8.6	7.2	22	12	13.2	30.5	ATV 212WU55N4	9.650	
7.5	10	14.7	11.7	9.7	22	16	17.6	30.9	ATV 212WU75N4	10.950	
11	15	21.2	16.9	14	22	22.5	24.8	30.9	ATV 212WD11N4	30.300	
15	20	28.4	22.6	18.7	22	30.5	33.6	30.4	ATV 212WD15N4	30.300	
18.5	25	34.9	27.8	23	22	37	40.7	30.5	ATV 212WD18N4	37.400	
22	30	41.6	33.1	27.3	22	43.5	47.9	30.7	ATV 212WD22N4	49.500	
30	40	56.7	44.7	37.3	22	58.5	64.4	30	ATV 212WD30N4	49.500	
37	50	68.9	54.4	45.3	22	79	86.9	30.3	ATV 212WD37N4	57.400	
45	60	83.8	65.9	55.2	22	94	103.4	30.2	ATV 212WD45N4	57.400	
55	75	102.7	89	67.6	22	116	127.6	32.7	ATV 212WD55N4	61.900	
75	100	141.8	111.3	93.3	22	160	176	31.1	ATV 212WD75N4	61.900	

Three-phase supply voltage: 380...480 V 50/60 Hz, with integrated category C1 filter

0.75	1	1.7	1.4	1.1	5	2.2	2.4	32.8	ATV 212W075N4C	7.500
1.5	2	3.2	2.6	2.1	5	3.7	4	30.9	ATV 212WU15N4C	7.500
2.2	3	4.6	3.7	3	5	5.1	5.6	30.5	ATV 212WU22N4C	7.500
3	—	6.2	5	4.1	5	7.2	7.9	31.2	ATV 212WU30N4C	10.550
4	5	8.2	6.5	5.4	5	9.1	10	30.6	ATV 212WU40N4C	10.550
5.5	7.5	11	8.7	7.2	22	12	13.2	30.5	ATV 212WU55N4C	10.550
7.5	10	14.7	11.7	9.7	22	16	17.6	30.9	ATV 212WU75N4C	11.850
11	15	21.1	16.7	13.9	22	22.5	24.8	30.9	ATV 212WD11N4C	36.500
15	20	28.4	22.8	18.7	22	30.5	33.6	30.4	ATV 212WD15N4C	36.500
18.5	25	34.5	27.6	22.7	22	37	40.7	30.5	ATV 212WD18N4C	45.000
22	30	41.1	33.1	27.1	22	43.5	47.9	30.7	ATV 212WD22N4C	58.500
30	40	58.2	44.4	38.3	22	58.5	64.4	30	ATV 212WD30N4C	58.500
37	50	68.9	54.4	45.3	22	79	86.9	30.3	ATV 212WD37N4C	77.400
45	60	83.8	65.9	55.2	22	94	103.4	30.2	ATV 212WD45N4C	77.400
55	75	102.7	89	67.6	22	116	127.6	32.7	ATV 212WD55N4C	88.400
75	100	141.8	111.3	93.3	22	160	176	31.1	ATV 212WD75N4C	88.400

Dimensions (overall)

Drives	W x H x D
ATV 212W	mm
075N4 (C)...U22N4 (C)	215 x 297 x 192
U30N4 (C)...U75N4 (C)	230 x 340 x 208
D11N4 (C), D15N4 (C)	290 x 560 x 315
D18N4 (C)	310 x 665 x 315
D22N4 (C), D30N4 (C)	284 x 720 x 315
D37N4 (C), D45N4 (C)	284 x 880 x 343
D55N4 (C), D75N4 (C)	362 x 1000 x 364

(1) Typical value for the indicated motor power and for the maximum prospective line Isc.

(2) These values are given for a nominal switching frequency of 12 kHz up to ATV 212WD15N4 and up to ATV 212WD15N4C or 8 kHz for ATV 212WD18N4...WD75N4 and ATV 212WD18N4C...WD75N4C, for use in continuous operation.

The switching frequency can be set between 6 and 16 kHz for all ratings. Above 8 kHz or 12 kHz, depending on the rating, the drive will reduce the switching frequency automatically in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current. The nominal motor current must not exceed this derating value. See the derating curves on our website www.schneider-electric.com.

(3) Total current harmonic distortion in accordance with IEC/EN 61000-3-12.