

Variable speed drives

Altivar 312

Integrated EMC filters and optional additional EMC filters

Presentation

Integrated filters

Altivar 312 drives, apart from ATV 312H●●●M3 and ATV312H●●●S6, have integrated radio interference input filters to comply with the EMC standard for variable speed electrical power drive "products" IEC 61800-3, categories C2 or C3, and to comply with the European EMC (electromagnetic compatibility) directive.

Additional EMC input filters

Additional EMC input filters (1) enable drives to meet more stringent requirements: they are designed to reduce conducted emissions on the line supply below the limits of standard IEC 61800-3 category C1 or C2 (see page 60426/3).

These additional EMC filters can be mounted beside or under the drive. They act as a support for the drives and are attached to them via tapped holes.

Use according to the type of line supply

Additional EMC filters can only be used on TN (neutral connection) and TT (neutral to earth) type systems.

Standard IEC 61800-3, appendix D2.1, states that on IT systems (isolated or impedance earthed neutral), filters can cause permanent insulation monitors to operate in a random manner.

The effectiveness of additional filters on this type of system depends on the type of impedance between neutral and earth, and therefore cannot be predicted. If a machine has to be installed on an IT system, one solution is to insert an isolation transformer and connect the machine locally on a TN or TT system.

Characteristics

Conformity to standards			EN 133200
Degree of protection			IP 21 and IP 41 on upper part
Maximum relative humidity			95% non-condensing, no dripping water conforming to IEC 60068-2-3
Ambient air temperature around the device	Operation	°C	- 10...+ 60
	Storage	°C	- 25...+ 70
Maximum operating altitude	Without derating	m	1000 (above this, derate the current by 1% for every additional 100 m)
Vibration resistance	Conforming to IEC 60068-2-6		1.5 mm peak to peak from 3 to 13 Hz 1 gn peak from 13 to 150 Hz
Shock resistance	Conforming to IEC 60068-2-27		15 gn for 11 ms
Maximum nominal voltage	50/60 Hz single-phase	V	240 + 10%
	50/60 Hz three-phase	V	240 + 10% 500 + 10%

(1) Not available for ATV 312H●●●S6 drives

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Option: additional EMC input filters



VW3 A31405

Additional EMC input filters

For drives	Filter							
Reference	Maximum length of shielded cable (1)	In (2)	II (3)	Losses (4)	Reference	Weight		
	IEC 61800-3 (5)							
	Category C2	Category C1						
	m	m	A	mA	W		kg	
Single-phase supply voltage: 200...240 V 50/60 Hz								
ATV 312H018M2 ATV 312H037M2 ATV 312H055M2 ATV 312H075M2	50	20	9	100	3.7	VW3 A31401	0.600	
ATV 312HU11M2 ATV 312HU15M2	50	20	16	150	6.9	VW3 A31403	0.775	
ATV 312HU22M2	50	20	22	80	7.5	VW3 A31405	1.130	
Three-phase supply voltage: 200...240 V 50/60 Hz								
ATV 312H018M3 ATV 312H037M3 ATV 312H055M3 ATV 312H075M3	5	–	7	7	2.6	VW3 A31402	0.650	
ATV 312HU11M3 ATV 312HU15M3 ATV 312HU22M3	5	–	15	15	9.9	VW3 A31404	1.000	
ATV 312HU30M3 ATV 312HU40M3	5	–	25	35	15.8	VW3 A31406	1.650	
ATV 312HU55M3 ATV 312HU75M3	5	–	47	45	19.3	VW3 A31407	3.150	
ATV 312HD11M3 ATV 312HD15M3	5	–	83	15	35.2	VW3 A31408	5.300	
Three-phase supply voltage: 380...500 V 50/60 Hz								
ATV 312H037N4 ATV 312H055N4 ATV 312H075N4 ATV 312HU11N4 ATV 312HU15N4	50	20	15	15	9.9	VW3 A31404	1.000	
ATV 312HU22N4 ATV 312HU30N4 ATV 312HU40N4	50	20	25	35	15.8	VW3 A31406	1.650	
ATV 312HU55N4 ATV 312HU75N4	50	20	47	45	19.3	VW3 A31407	3.150	
ATV 312HD11N4 ATV 312HD15N4	50	20	49	45	27.4	VW3 A31409	4.750	

(1) The filter selection tables give the maximum lengths for shielded cables connecting motors to drives for a switching frequency of 2 to 16 kHz. These maximum lengths are given as examples only, as they vary depending on the stray capacitance of the motors and the cables used. If motors are connected in parallel, the sum of the cable lengths must be taken into account.

(2) In: nominal filter current.

(3) II: maximum earth leakage current at 50 Hz.

(4) Via heat dissipation, at the nominal filter current (In).

(5) Standard IEC 61800-3: EMC immunity and conducted and radiated EMC emissions:

- Category C1: public power supply (residential)

- Category C2: industrial power supply