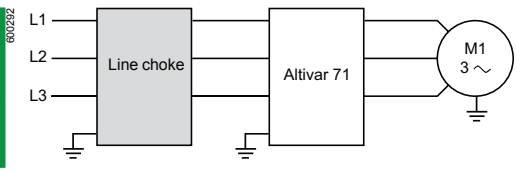
# Variable speed drives
## Altivar 71: reduction of current harmonics
## Option: line chokes






## Presentation

Line chokes are 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 phase-to-phase voltage drop of between 3% and 5% of the nominal supply voltage. Values higher than this will cause loss of torque.

Line chokes are mandatory for:
- ATV71HU40M3…HU75M3 drives powered by a 200…240 V 50/60 Hz single-phase supply voltage
- ATV71HD90N4D…HC50N4D and ATV71QD90N4...QC●●N4 drives powered by a 380…480 V 50/60 Hz three-phase supply voltage
- ATV71QD90N4…QC50N4, ATV71HC11Y…HC63Y and ATV71QC11Y…QC63Y drives

Their use is recommended for ATV71H●●●S6X and ATV71HU22Y…HD90Y drives.

They can also be used with:
- ATV71H●●●M3 drives powered by a 200…240 V 50/60 Hz three-phase voltage, ATV71H●●●M3X, ATV71●●●●N4 and ATV71P●●●●N4Z drives
- ATV71●●●Y drives in order to reach a total current distortion factor complying with standard IEC 61000-3-12

***Note**: ATV71HD90N4...HC50N4 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 1/20).*

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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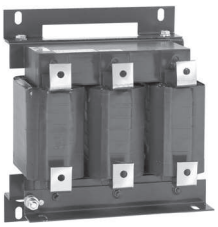
PF107532



*VW3A4572*

### References

| For drives | Line supply Isc | Line choke | | | | Quantity required 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** | | | | | | | | |
| ATV71HU40M3 *(1)* | 5 | 2 | 25 | – | 45 | 1 | **VW3A58501** | 3.500 |
| ATV71HU55M3 *(1)* | 5 | 1 | 45 | – | 50 | 1 | **VW3A58502** | 3.500 |
| ATV71HU75M3 *(1)* | 22 | 1 | 45 | – | 50 | 1 | **VW3A58502** | 3.500 |
| **Three-phase supply voltage: 200…240 V 50/60 Hz** | | | | | | | | |
| ATV71H037M3, H075M3 | 5 | 10 | 4 | – | 45 | 1 | **VW3A4551** | 1.500 |
| ATV71HU15M3, HU22M3 | 5 | 4 | 10 | – | 65 | 1 | **VW3A4552** | 3.000 |
| ATV71HU30M3 | 5 | 2 | 17 | – | 75 | 1 | **VW3A4553** | 3.500 |
| ATV71HU40M3 | 5 | 1 | 31 | – | 90 | 1 | **VW3A4554** | 6.000 |
| ATV71HU55M3 | 22 | 1 | 31 | – | 90 | 1 | **VW3A4554** | 6.000 |
| ATV71HU75M3, HD11M3X | 22 | 0.5 | 60 | – | 94 | 1 | **VW3A4555** | 11.000 |
| ATV71HD15M3X | 22 | 0.3 | 107 | – | 260 | 1 | **VW3A4556** | 16.000 |
| ATV71HD18M3X…HD45M3X | 22 | 0.15 | 230 | – | 400 | 1 | **VW3A4557** | 45.000 |
| ATV71HD55M3X | 35 | 0.049 | 429 | 855 | 278 | 1 | **VW3A4562** | 50.000 |
| ATV71HD75M3X | 35 | 0.038 | 509 | 1025 | 280 | 1 | **VW3A4563** | 59.000 |
| **Three-phase supply voltage: 380…480 V 50/60 Hz** | | | | | | | | |
| ATV71H075N4, HU15N4<br>ATV71W075N4, WU15N4<br>ATV71P075N4Z, PU15N4Z | 5 | 10 | 4 | – | 45 | 1 | **VW3A4551** | 1.500 |
| ATV71HU22N4…HU40N4<br>ATV71WU22N4…WU40N4<br>ATV71PU22N4Z…PU40N4Z | 5 | 4 | 10 | – | 65 | 1 | **VW3A4552** | 3.000 |
| ATV71HU55N4, HU75N4<br>ATV71WU55N4, WU75N4<br>ATV71PU55N4Z, PU75N4Z | 22 | 2 | 17 | – | 75 | 1 | **VW3A4553** | 3.500 |
| ATV71HD11N4, HD15N4<br>ATV71WD11N4, WD15N4<br>ATV71PD11N4Z | 22 | 1 | 31 | – | 90 | 1 | **VW3A4554** | 6.000 |
| ATV71HD18N4, HD22N4<br>ATV71WD18N4, WD22N4 | 22 | 0.5 | 60 | – | 94 | 1 | **VW3A4555** | 11.000 |
| ATV71HD30N4…HD55N4<br>ATV71WD30N4…WD55N4 | 22 | 0.3 | 107 | – | 260 | 1 | **VW3A4556** | 16.000 |
| ATV71HD75N4<br>ATV71WD75N4 | 22 | 0.155 | 184 | 370 | 220 | 1 | **VW3A4558** | 31.000 |
| ATV71HD90N4D, HC11N4D *(2)* | 35 | 0.12 | 222 | 346 | 278 | 1 | **VW3A4559** | 35.000 |
| ATV71HC13N4D *(2)* | 35 | 0.098 | 264 | 530 | 245 | 1 | **VW3A4560** | 43.000 |
| ATV71HC16N4D *(2)* | 50 | 0.066 | 344 | 685 | 258 | 1 | **VW3A4561** | 47.000 |
| ATV71HC20N4D *(2)* | 50 | 0.060 | 450 | 850 | 335 | 1 | **VW3A4569** | 70.000 |
| ATV71HC25N4D, HC28N4D *(2)* | 50 | 0.038 | 613 | 1150 | 307 | 1 | **VW3A4564** | 73.000 |
| ATV71HC31N4D *(2)* | 50 | 0.032 | 720 | 1352 | 428 | 1 | **VW3A4565** | 82.000 |
| ATV71HC40N4D *(2)* | 50 | 0.060 | 450 | 850 | 335 | 2 | **VW3A4569** | 70.000 |
| ATV71HC50N4D *(2)* | 50 | 0.038 | 613 | 1150 | 307 | 2 | **VW3A4564** | 73.000 |

*(1) Use of a line choke is recommended.*
*(2) Use of a line choke is mandatory (see table of combinations on page 1/34).*

Drive/option combinations:
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# Variable speed drives
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## Option: line chokes



**References (continued)**

| For drives | Line supply Isc | Line choke | | | | Quantity required per drive | Reference | Weight |
|---|---|---|---|---|---|---|---|---|
| | | Inductance value | Nominal current | Saturation current | Losses | | | |
| | kA | mH | A | A | W | | | kg |
| **Three-phase supply voltage: 380…480 V 50/60 Hz (continued)** | | | | | | | | |
| ATV71QD90N4 *(1)* | 35 | 0.12 | 222 | 346 | 278 | 1 | **VW3A4559** | 35.000 |
| ATV71QC11N4 *(1)* | 35 | 0.098 | 264 | 530 | 245 | 1 | **VW3A4560** | 43.000 |
| ATV71QC13N4 *(1)* | 35 | 0.085 | 300 | 570 | 315 | 1 | **VW3A4568** | 46.000 |
| ATV71QC16N4 *(1)* | 50 | 0.066 | 344 | 685 | 258 | 1 | **VW3A4561** | 47.000 |
| ATV71QC20N4 *(1)* | 50 | 0.06 | 450 | 850 | 335 | 1 | **VW3A4569** | 70.000 |
| ATV71QC25N4 *(1)* | 50 | 0.038 | 613 | 1150 | 307 | 1 | **VW3A4564** | 73.000 |
| ATV71QC31N4 *(1)* | 50 | 0.066 | 344 | 685 | 258 | 2 | **VW3A4561** | 47.000 |
| ATV71QC40N4 *(1)* | 50 | 0.038 | 513 | 1025 | 320 | 2 | **VW3A4563** | 55.000 |
| ATV71QC50N4 *(1)* | 50 | 0.026 | 590 | 1180 | 320 | 2 | **VW3A4573** | 60.000 |
| **Three-phase supply voltage: 500…600 V 50/60 Hz** | | | | | | | | |
| ATV71HU15S6X...HU22S6X | 22 | 10 | 4 | – | 45 | 1 | **VW3A4551** | 1.500 |
| ATV71HU30S6X...HU55S6X | 22 | 4 | 10 | – | 65 | 1 | **VW3A4552** | 3.000 |
| ATV71HU75S6X | 22 | 2 | 17 | – | 75 | 1 | **VW3A4553** | 3.500 |
| **Three-phase supply voltage: 500…690 V 50/60 Hz** | | | | | | | | |
| ATV71HU22Y…HU30Y *(2)* | 22 | 10 | 4 | – | 45 | 1 | **VW3A4551** | 1.500 |
| ATV71HU40Y<br>ATV71HD55Y, HD75Y *(2)* | 22 | 4 | 10 | – | 65 | 2 | **VW3A4552** | 3.000 |
| ATV71HD11Y, HD15Y *(2)* | 22 | 2 | 17 | – | 75 | 1 | **VW3A4553** | 3.500 |
| ATV71HD18Y, HD22Y *(2)* | 22 | 1 | 31 | – | 90 | 1 | **VW3A4554** | 6.000 |
| ATV71HD30Y…HD45Y *(2)* | 22 | 0.5 | 60 | – | 94 | 1 | **VW3A4555** | 11.000 |
| ATV71HD55Y…HD90Y *(2)* | 22 | 0.3 | 107 | – | 260 | 1 | **VW3A4556** | 16.000 |
| ATV71HC11Y *(1)*<br>ATV71QC11Y *(1)* | 28 | 0.22 | 152 | 320 | 220 | 1 | **VW3A4570** | 28.000 |
| ATV71HC13Y *(1)*<br>ATV71QC13Y *(1)* | 28 | 0.23 | 220 | 405 | 330 | 1 | **VW3A4571** | 79.000 |
| ATV71HC16Y *(1)*<br>ATV71QC16Y *(1)* | 35 | 0.23 | 220 | 405 | 330 | 1 | **VW3A4571** | 79.000 |
| ATV71HC20Y *(1)*<br>ATV71QC20Y *(1)* | 35 | 0.098 | 264 | 530 | 245 | 1 | **VW3A4560** | 35.000 |
| ATV71HC25Y, HC31Y *(1)*<br>ATV71QC25Y, QC31Y *(1)* | 35 | 0.1 | 428 | 770 | 495 | 1 | **VW3A4572** | 90.000 |
| ATV71HC40Y *(1)*<br>ATV71QC40Y *(1)* | 35 | 0.085 | 300 | 474 | 315 | 2 | **VW3A4568** | 46.000 |
| ATV71HC50Y *(1)*<br>ATV71QC50Y *(1)* | 35 | 0.1 | 428 | 770 | 495 | 2 | **VW3A4572** | 90.000 |
| ATV71HC63Y *(1)*<br>ATV71QC63Y *(1)* | 42 | 0.1 | 428 | 770 | 495 | 2 | **VW3A4572** | 90.000 |

*(1) Use of a line choke is mandatory (see table of combinations on page 1/34).*
*(2) Use of a line choke is recommended.*

Drive/option combinations:
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