# Product data sheet
## Characteristics

# ATV310HU40N4E
variable speed drive, Altivar ATV310, heavy duty, 4kW, 5hp, normal duty, 5.5kW, 7.5hp, 380 to 460V, without EMC



## Main

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|---|---|
| Range of product | Altivar 310 |
| Product or component type | Variable speed drive |
| Product specific application | Simple machine |
| Assembly style | With heat sink |
| Device short name | ATV310 |
| Network number of phases | Three phase |
| [Us] rated supply voltage | 380...460 V - 15...10 % |
| Motor power kW | 4 KW for heavy duty<br>5.5 KW for normal duty |
| Motor power hp | 5 Hp for heavy duty<br>7.5 Hp for normal duty |
| Noise level | 50 DB |

## Complementary

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|---|---|
| Quantity per set | Set of 1 |
| EMC filter | Without EMC filter |
| Type of cooling | Integrated fan |
| Communication port protocol | Modbus |
| Connector type | RJ45 (on front face) for Modbus |
| Physical interface | 2-wire RS 485 for Modbus |
| Transmission frame | RTU for Modbus |
| Transmission rate | 4800 bit/s<br>9600 bit/s<br>19200 bit/s<br>38400 bit/s |
| Number of addresses | 1…247 for Modbus |
| Communication service | Read holding registers (03) 29 words<br>Write single register (06) 29 words<br>Write multiple registers (16) 27 words<br>Read/Write multiple registers (23) 4/4 words<br>Read device identification (43) |
| Line current | 13.7 A at 380 V (heavy duty)<br>18.0 A at 380 V (normal duty)<br>11.4 A at 460 V (heavy duty)<br>14.9 A at 460 V (normal duty) |
| Apparent power | 9.1 KVA at 460 V (heavy duty)<br>15.1 KVA at 460 V (normal duty) |
| Prospective line Isc | 5 KA ( heavy duty )<br>5 KA ( normal duty ) |

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| Continuous output current | 9.5 A heavy duty<br>12.1 A normal duty |
| Maximum transient current | 14.3 A during 60 s (heavy duty)<br>13.3 A during 60 s (normal duty) |
| Power dissipation in W | 115.1 W, at In (heavy duty)<br>158.3 W, at In (normal duty) |
| Speed drive output frequency | 0.5…400 Hz |
| Nominal switching frequency | 4 kHz |
| Switching frequency | 2...12 kHz adjustable |
| Speed range | 1…20 for asynchronous motor |
| Transient overtorque | 170…200 % of nominal motor torque depending on drive rating and type of motor |
| Braking torque | Up to 150 % of nominal motor torque with braking resistor<br>Up to 70 % of nominal motor torque without braking resistor |
| Asynchronous motor control profile | Voltage/Frequency ratio (V/f)<br>Voltage/Frequency ratio - Energy Saving, quadratic U/f<br>Sensorless vector control (SVC) |
| Motor slip compensation | Adjustable |
| Output voltage | 380...460 V three phase |
| Electrical connection | Terminal, clamping capacity: 2.5...4 mm², 14 AWG...12 AWG (L1, L2, L3, PA/+, PB, U, V, W) |
| Tightening torque | 1.2…1.4 N.M |
| Insulation | Electrical between power and control |
| Supply | Internal supply for reference potentiometer: 5 V (4.75…5.25 V)DC, <10 mA with overload and shor<br>Internal supply for logic inputs: 24 V (20.4…28.8 V)DC, <100 mA with overload and short-circuit p |
| Analogue input number | 1 |
| Analogue input type | Configurable current AI1 0...20 mA 250 Ohm<br>Configurable voltage AI1 0...10 V 30 kOhm<br>Configurable voltage AI1 0...5 V 30 kOhm |
| Discrete input number | 4 |
| Discrete input type | Programmable LI1...LI4 24 V 18...30 V |
| Discrete input logic | Negative logic (sink), > 16 V (state 0), < 10 V (state 1), input impedance 3.5 kOhm<br>Positive logic (source), 0...< 5 V (state 0), > 11 V (state 1) |
| Sampling duration | 10 Ms for analogue input<br>20 Ms, tolerance +/- 1 ms for logic input |
| Linearity error | +/- 0.3 % of maximum value for analogue input |
| Analogue output number | 1 |
| Analogue output type | AO1 software-configurable voltage: 0...10 V AC 0...10 V 0…0.02 A, impedance: 470 Ohm, resoluti<br>AO1 software-configurable current: 0...20 mA, impedance: 800 Ohm, resolution 8 bits |
| Discrete output number | 2 |
| Discrete output type | Logic output LO+, LO-<br>Protected relay output R1A, R1B, R1C 1 C/O |
| Minimum switching current | 5 MA at 24 V DC for logic relay |
| Maximum switching current | 2 A at 250 V AC on inductive load cos phi = 0.4 L/R = 7 ms for logic relay<br>2 A at 30 V DC on inductive load cos phi = 0.4 L/R = 7 ms for logic relay<br>3 A at 250 V AC on resistive load cos phi = 1 L/R = 0 ms for logic relay<br>4 A at 30 V DC on resistive load cos phi = 1 L/R = 0 ms for logic relay |
| Acceleration and deceleration ramps | Linear from 0...999.9 s<br>S<br>U |
| Braking to standstill | By DC injection, <30 s |
| Protection type | Line supply overvoltage<br>Line supply undervoltage<br>Overcurrent between output phases and earth<br>Overheating protection<br>Short-circuit between motor phases<br>Against input phase loss in three-phase<br>Thermal motor protection via the drive by continuous calculation of I²t |
| Frequency resolution | Analog input: converter A/D, 10 bits<br>Display unit: 0.1 Hz |
| Time constant | 20 Ms +/- 1 ms for reference change |
| Operating position | Vertical +/- 10 degree |
| Height | 184 Mm |
| Width | 140 Mm |
| Depth | 151 Mm |
| Net weight | 1.8 Kg |

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| Supply frequency | 50/60 Hz +/- 5 % |
| Product destination | Asynchronous motors |

## Environment

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| Electromagnetic compatibility | Electrical fast transient/burst immunity test - test level: level 4 conforming to IEC 61000-4-4<br>Electrostatic discharge immunity test - test level: level 3 conforming to IEC 61000-4-2<br>Immunity to conducted disturbances - test level: level 3 conforming to IEC 61000-4-6<br>Radiated radio-frequency electromagnetic field immunity test - test level: level 3 conforming to<br>Voltage dips and interruptions immunity test conforming to IEC 61000-4-11<br>Surge immunity test - test level: level 3 conforming to IEC 61000-4-5 |
| Standards | IEC 61800-5-1<br>IEC 61800-3 |
| Product certifications | CE[RETURN]EAC[RETURN]KC |
| IP degree of protection | IP20 without blanking plate on upper part<br>IP4X top |
| Pollution degree | 2 conforming to IEC 61800-5-1 |
| Environmental characteristic | Dust pollution resistance class 3S2 conforming to IEC 60721-3-3<br>Chemical pollution resistance class 3C3 conforming to IEC 60721-3-3 |
| Shock resistance | 15 gn conforming to IEC 60068-2-27 for 11 ms |
| Relative humidity | 5…95 % without condensation conforming to IEC 60068-2-3<br>5…95 % without dripping water conforming to IEC 60068-2-3 |
| Ambient air temperature for storage | -25…70 °C |
| Ambient air temperature for operation | -10…55 °C without derating<br>55…60 °C protective cover from the top of the drive removed with current derating 2.2 % per °C |
| Operating altitude | <= 1000 m without derating |

## Packing Units

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| Unit Type of Package 1 | PCE |
| Number of Units in Package 1 | 1 |
| Package 1 Height | 19.000 Cm |
| Package 1 Width | 18.500 Cm |
| Package 1 Length | 23.200 Cm |
| Package 1 Weight | 2.136 Kg |
| Unit Type of Package 2 | P06 |
| Number of Units in Package 2 | 24 |
| Package 2 Height | 75.000 Cm |
| Package 2 Width | 60.000 Cm |
| Package 2 Length | 80.000 Cm |
| Package 2 Weight | 64.264 Kg |

## Offer Sustainability

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| Recyclability potential, in % | 23 |
| Total lifecycle Carbon footprint | 4 992 kg CO2 eq. |
| Carbon footprint of the manufacturing phase [A1 to A3] | 64.75510272285673 |
| Carbon footprint of the manufacturing phase [A1 to A3] | 65 kg CO2 eq. |
| Carbon footprint of the distribution phase [A4] | 0.2091198361963111 |
| Carbon footprint of the distribution phase [A4] | 0.2 kg CO2 eq. |
| Carbon footprint of the installation phase [A5] | 0.5811170123140332 |
| Carbon footprint of the installation phase [A5] | 0.6 kg CO2 eq. |
| Carbon footprint of the use phase [B2, B3, B4, B6] | 4921.252630124855 |
| Carbon footprint of the use phase [B2, B3, B4, B6] | 4 921 kg CO2 eq. |
| Mercury free | Yes |
| Sustainable packaging | Yes |
| Carbon footprint of the end-of-life phase [C1 to C4] | 4.828504236521512 |
| Carbon footprint of the end-of-life phase [C1 to C4] | 5 kg CO2 eq. |
| Environmental Disclosure | Product Environmental Profile |
| Total lifecycle Carbon footprint | 4992 |
| Packaging made with recycled cardboard | Yes |

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| Packaging without single use plastic | Yes |
| SCIP Number | 0400715c-93d3-4d00-b796-3a24d93652ee |
| REACh Regulation | Reference contains Substances of Very High Concern above the threshold |
| EU RoHS Directive | Compliant By Exemption |
| California proposition 65 | WARNING: This product can expose you to chemicals including: Lead and lead compounds, which |
| Product contributes to saved and avoided emissions | Yes |
| End of life manual availability | End Of Life Information |
| Take-back | No |
| WEEE Label | The product must be disposed on European Union markets following specific waste collection and |

## Contractual warranty

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|---|---|
| Warranty (in months) | 18 |

Product Life Status : Commercialised