

ATV950D37N4EU

Variable speed drive, Altivar Process ATV900,
ATV950, 37kW/50 hp, 380/480 V, IP55/UL
type12, disc.switch





Main

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| Range of product | Altivar Process ATV900 |
| Device application | Industrial application |
| Product or component type | Variable speed drive |
| Product destination | Asynchronous motors Synchronous motors |
| Product specific application | Process for industrial |
| Variant | With load break switch With braking chopper |
| Network number of phases | 3 phases |
| Mounting mode | Wall mount |
| Communication port protocol | EtherNet/IP Modbus serial Modbus TCP |
| [Us] rated supply voltage | 380...480 V - 15...10 % |
| Motor power kW | 37.0 KW for normal duty 30.0 kW for heavy duty |
| Motor power hp | 50.0 Hp for normal duty 40.0 hp for heavy duty |
| Continuous output current | 74.5 A at 4 kHz for normal duty 61.5 A at 4 kHz for heavy duty |
| EMC filter | Integrated With EMC plate option |
| IP degree of protection | IP55 |
| Degree of protection | UL type 12 |
| Option module | Slot A: communication module for Profibus DP V1 Slot A: communication module for PROFINET Slot A: communication module for DeviceNet Slot A: communication module for EtherCAT Slot A: communication module for CANopen daisy chain RJ45 Slot A: communication module for CANopen SUB-D 9 Slot A: communication module for CANopen screw terminals Slot A/slot B/slot C: digital and analog I/O extension module Slot A/slot B/slot C: output relay extension module Slot B: 5/12 V digital encoder interface module Slot B: analog encoder interface module Slot B: resolver encoder interface module Communication module for Ethernet Powerlink |
| Discrete input logic | 16 preset speeds |
| Asynchronous motor control profile | Variable torque standard Optimized torque mode Constant torque standard |
| Synchronous motor control profile | Permanent magnet motor Synchronous reluctance motor |
| Maximum output frequency | 599 Hz |
| Switching frequency | 2...16 kHz adjustable 4...16 kHz with derating factor |
| Nominal switching frequency | 4 kHz |
| Line current | 66.2 A at 380 V (normal duty) 54.8 A at 380 V (heavy duty) 57.3 A at 480 V (normal duty) 48.3 A at 480 V (heavy duty) |
| Apparent power | 47.6 KVA at 480 V (normal duty) 40.2 kVA at 480 V (heavy duty) |
| Maximum transient current | 89.4 A during 60 s (normal duty) 92.3 A during 60 s (heavy duty) |

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| Network frequency | 50...60 Hz |
| Prospective line I _{sc} | 50 kA |

Complementary

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| Discrete input number | 10 |
| Discrete input type | DI1...DI8 programmable, 24 V DC (≤ 30 V), impedance: 3.5 kOhm DI7, DI8 programmable as pulse input: 0...30 kHz, 24 V DC (≤ 30 V) STOA, STOB safe torque off, 24 V DC (≤ 30 V), impedance: > 2.2 kOhm |
| Discrete output number | 2 |
| Discrete output type | Logic output DQ+ 0...1 kHz ≤ 30 V DC 100 mA Programmable as pulse output DQ+ 0...30 kHz ≤ 30 V DC 20 mA Logic output DQ- 0...1 kHz ≤ 30 V DC 100 mA |
| Analogue input number | 3 |
| Analogue input type | AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 30 kOhm, resolution 12 bits AI1, AI2, AI3 software-configurable current: 0...20 mA/4...20 mA, impedance: 250 Ohm, resolution 12 bits |
| Analogue output number | 2 |
| Analogue output type | Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AQ1, AQ2: 0...20 mA impedance 500 Ohm, resolution 10 bits |
| Relay output number | 3 |
| Relay output type | Configurable relay logic R1: fault relay NO/NC electrical durability 100000 cycles Configurable relay logic R2: sequence relay NO electrical durability 1000000 cycles Configurable relay logic R3: sequence relay NO electrical durability 1000000 cycles |
| Maximum switching current | Relay output R1 on resistive load, $\cos \phi = 1$: 3 A at 250 V AC Relay output R1 on resistive load, $\cos \phi = 1$: 3 A at 30 V DC Relay output R1 on inductive load, $\cos \phi = 0.4$ and L/R = 7 ms: 2 A at 250 V AC Relay output R1 on inductive load, $\cos \phi = 0.4$ and L/R = 7 ms: 2 A at 30 V DC Relay output R2, R3 on resistive load, $\cos \phi = 1$: 5 A at 250 V AC Relay output R2, R3 on resistive load, $\cos \phi = 1$: 5 A at 30 V DC Relay output R2, R3 on inductive load, $\cos \phi = 0.4$ and L/R = 7 ms: 2 A at 250 V AC Relay output R2, R3 on inductive load, $\cos \phi = 0.4$ and L/R = 7 ms: 2 A at 30 V DC |
| Minimum switching current | Relay output R1, R2, R3: 5 mA at 24 V DC |
| Physical interface | Ethernet 2-wire RS 485 |
| Connector type | 2 RJ45 1 RJ45 |
| Method of access | Slave Modbus TCP |
| Transmission rate | 10, 100 Mbits 4.8 kbps 9600 bit/s 19200 bit/s |
| Transmission frame | RTU |
| Number of addresses | 1...247 |
| Data format | 8 bits, configurable odd, even or no parity |
| Type of polarization | No impedance |
| 4 quadrant operation possible | True |
| Acceleration and deceleration ramps | Linear adjustable separately from 0.01...9999 s |
| Motor slip compensation | Not available in permanent magnet motor law Automatic whatever the load Can be suppressed Adjustable |
| Braking to standstill | By DC injection |
| Brake chopper integrated | True |
| Maximum input current | 66.2 A |
| Maximum output voltage | 480.0 V |
| Relative symmetric network frequency tolerance | 5 % |
| Base load current at high overload | 61.5 A |
| Base load current at low overload | 74.5 A |

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| With safety function Safely Limited Speed (SLS) | True |
| With safety function Safe brake management (SBC/SBT) | True |
| With safety function Safe Operating Stop (SOS) | False |
| With safety function Safe Position (SP) | False |
| With safety function Safe programmable logic | False |
| With safety function Safe Speed Monitor (SSM) | False |
| With safety function Safe Stop 1 (SS1) | True |
| With sft fct Safe Stop 2 (SS2) | False |
| With safety function Safe torque off (STO) | True |
| With safety function Safely Limited Position (SLP) | False |
| With safety function Safe Direction (SDI) | False |
| Protection type | Thermal protection: motor Safe torque off: motor Motor phase break: motor Thermal protection: drive Safe torque off: drive Overheating: drive Overcurrent between output phases and earth: drive Overload of output voltage: drive Short-circuit protection: drive Motor phase break: drive Overvoltages on the DC bus: drive Line supply overvoltage: drive Line supply undervoltage: drive Line supply phase loss: drive Overspeed: drive Break on the control circuit: drive |
| Quantity per set | 1 |
| Width | 290 mm |
| Height | 910 mm |
| Depth | 401 mm |
| Product weight | 52 kg |
| Electrical connection | Control: screw terminal 0.5...1.5 mm ² Line side: screw terminal 25...50 mm ² DC bus: screw terminal 25...50 mm ² Motor: screw terminal 35...50 mm ² |
| Transmission rate | 10/100 Mbit/s for Ethernet IP/Modbus TCP 4.8, 9.6, 19.2, 38.4 kbit/s for Modbus serial |
| Exchange mode | Half duplex, full duplex, autonegotiation Ethernet IP/Modbus TCP |
| Data format | 8 bits, configurable odd, even or no parity for Modbus serial |
| Type of polarization | No impedance for Modbus serial |
| Number of addresses | 1...247 for Modbus serial |
| Supply | External supply for digital inputs: 24 V DC (19...30 V), <1.25 mA, protection type: overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection Internal supply for digital inputs and STO: 24 V DC (21...27 V), <200 mA, protection type: overload and short-circuit protection |
| Local signalling | Local diagnostic: 3 LED (mono/dual colour) Embedded communication status: 5 LED (dual colour) Communication module status: 2 LED (dual colour) Presence of voltage: 1 LED (red) |
| Input compatibility | DI1...DI8: discrete input level 1 PLC conforming to EN/IEC 61131-2 DI7, DI8: pulse input level 1 PLC conforming to IEC 65A-68 STOA, STOB: discrete input level 1 PLC conforming to EN/IEC 61131-2 |
| Discrete input logic | Positive logic (source) (DI1...DI8), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (DI1...DI8), > 16 V (state 0), < 10 V (state 1) Positive logic (source) (DI7, DI8), < 0.6 V (state 0), > 2.5 V (state 1) Positive logic (source) (STOA, STOB), < 5 V (state 0), > 11 V (state 1) |
| Sampling duration | 2 Ms +/- 0.5 ms (DI1...DI8) - discrete input 5 Ms +/- 1 ms (DI7, DI8) - pulse input 1 Ms +/- 1 ms (AI1, AI2, AI3) - analog input 5 ms +/- 1 ms (AQ1, AQ2) - analog output |
| Accuracy | +/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input +/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output |
| Linearity error | AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input AQ1, AQ2: +/- 0.2 % for analog output |

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| Refresh time | Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms) |
| Isolation | Between power and control terminals |

Environment

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| Operating altitude | <= 1000 m without derating 1000...4800 m with current derating 1 % per 100 m |
| Operating position | Vertical +/- 10 degree |
| Product certifications | Bureau Veritas TÜV CSA DNV-GL ABS UL ATEX INERIS |
| Marking | CE |
| Standards | UL 508C EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1 |
| Maximum THDI | <48 % from 80...100 % of load conforming to IEC 61000-3-12 |
| Assembly style | Enclosed |
| Electromagnetic compatibility | Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6 |
| Environmental class (during operation) | Class 3C3 according to IEC 60721-3-3 Class 3S3 according to IEC 60721-3-3 |
| Maximum acceleration under shock impact (during operation) | 150 m/s ² at 11 ms |
| Maximum acceleration under vibrational stress (during operation) | 10 m/s ² at 13...200 Hz |
| Maximum deflection under vibratory load (during operation) | 1.5 mm at 2...13 Hz |
| Permitted relative humidity (during operation) | Class 3K5 according to EN 60721-3 |
| Overvoltage category | III |
| Regulation loop | Adjustable PID regulator |
| Insulation resistance | > 1 MOhm 500 V DC for 1 minute to earth |
| Noise level | 69.7 dB conforming to 86/188/EEC |
| Vibration resistance | 1.5 mm peak to peak (f= 2...13 Hz) conforming to IEC 60068-2-6 1 gn (f= 13...200 Hz) conforming to IEC 60068-2-6 |
| Shock resistance | 15 gn for 11 ms conforming to IEC 60068-2-27 |
| Environmental characteristic | Chemical pollution resistance class 3C3 conforming to EN/IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to EN/IEC 60721-3-3 |
| Relative humidity | 5...95 % without condensation conforming to IEC 60068-2-3 |
| Ambient air temperature for operation | -15...40 °C (without derating) 40...50 °C (with derating factor) |
| Noise level | 69.7 dB |
| Pollution degree | 2 |
| Ambient air transport temperature | -40...70 °C |
| Ambient air temperature for storage | -40...70 °C |

Packing Units

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| Unit Type of Package 1 | PCE |
| Number of Units in Package 1 | 1 |
| Package 1 Height | 62.0 cm |
| Package 1 Width | 42.0 cm |
| Package 1 Length | 105.0 cm |
| Package 1 Weight | 55.0 kg |

Offer Sustainability

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| Sustainable offer status | Green Premium product |
| REACH Regulation | REACH Declaration |
| EU RoHS Directive | Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration |
| Mercury free | Yes |
| China RoHS Regulation | China RoHS Declaration |
| RoHS exemption information | Yes |
| Environmental Disclosure | Product Environmental Profile |
| Circularity Profile | End Of Life Information |
| WEEE | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |
| Upgradeability | Upgraded components available |