

ATV21HU75N4

variable speed drive - ATV21 - 7.5kW 10HP - 480V - EMC filter class A - IP20



Main

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| Range of product | Altivar 21 |
| Product or component type | Variable speed drive |
| Product destination | Asynchronous motors |
| Product specific application | Pumps and fans in HVAC |
| Assembly style | With heat sink |
| Component name | ATV21 |
| EMC filter | Class A EMC filter integrated |
| Power supply voltage | 380...480 V (- 15...10 %) |
| Network number of phases | 3 phases |
| Motor power kW | 7.5 kW |
| Motor power hp | 10 hp |
| Line current | 11.7 A for 480 V 14.7 A for 380 V |
| Speed range | 1...10 |
| Transient overtorque | 120 % of nominal motor torque +/- 10 % for 60 s |
| Asynchronous motor control profile | Constant voltage/frequency ratio Current flux vector control (FVC) without speed feedback Energy saving ratio Quadratic voltage/frequency ratio Constant voltage/frequency ratio with automatic IR compensation |
| Communication port protocol | Modbus |
| Type of polarization | No impedance |
| IP degree of protection | IP20 on upper part without blanking plate on cover conforming to EN/IEC 60529 IP20 on upper part without blanking plate on cover conforming to EN/IEC 61800-5-1 IP21 conforming to EN/IEC 60529 IP21 conforming to EN/IEC 61800-5-1 IP41 on upper part conforming to EN/IEC 60529 IP41 on upper part conforming to EN/IEC 61800-5-1 |
| Option card | APOGEE FLN communication card BACnet communication card LonWorks communication card METASYS N2 communication card |

Complementary

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| Power supply voltage limits | 323...528 V |
| Power supply frequency | 50...60 Hz (- 5...5 %) |
| Power supply frequency limits | 47.5...63 Hz |
| Apparent power | 12.2 kVA for 380 V |
| Maximum prospective line Isc | 22 kA |
| Maximum continuous output current | 16 A at 380/460 V |
| Maximum transient current | 17.6 A for 60 s |
| Speed drive output frequency | 0.5...200 Hz |
| Nominal switching frequency | 12 kHz |
| Switching frequency | 12...16 kHz with derating 6...16 kHz adjustable |
| Speed accuracy | +/- 10 % of nominal slip for 0.2 Tn to Tn torque variation |

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| Torque accuracy | +/- 15 % |
| Regulation loop | Adjustable PI regulator |
| Motor slip compensation | Adjustable Automatic whatever the load Not available in voltage/frequency ratio motor control |
| Diagnostic | 1 LED red for DC bus energized |
| Output voltage | <= power supply voltage |
| Insulation | Electrical between power and control |
| Recommended type of cable for mounting in an enclosure | With UL Type 1 kit: 3-strand UL 508 cable at 40 °C, copper 75 °C PVC Without mounting kit: 1-strand IEC cable at 45 °C, copper 70 °C PVC Without mounting kit: 1-strand IEC cable at 45 °C, copper 90 °C XLPE/EPR |
| Electrical connection | L1/R, L2/S, L3/T terminal 16 mm ² / AWG 6 VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES terminal 2.5 mm ² / AWG 14 |
| Tightening torque | L1/R, L2/S, L3/T 2.5 N.m / 22 lb.in VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES 0.6 N.m |
| Supply | Internal supply at 24 V DC, voltage limits 21...27 V <= 200 mA for overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm) at 10.5 V DC, tolerance +/- 5 % <= 10 mA for overload and short-circuit protection |
| Analogue input number | 2 |
| Analogue input type | VIA switch-configurable current 0...20 mA, impedance 242 Ohm, resolution 11 bits VIA switch-configurable voltage 0...10 V DC, input voltage 24 V max, impedance 30000 Ohm, resolution 11 bits VIB configurable PTC probe 0...6 probes, impedance 1500 Ohm VIB configurable voltage 0...10 V DC, input voltage 24 V max, impedance 30000 Ohm, resolution 11 bits |
| Sampling duration | F 2 ms +/- 0.5 ms for discrete input(s) R 2 ms +/- 0.5 ms for discrete input(s) RES 2 ms +/- 0.5 ms for discrete input(s) VIA 2 ms +/- 0.5 ms for analog input(s) VIB 2 ms +/- 0.5 ms for analog input(s) |
| Response time | FLA, FLC 7 ms +/- 0.5 ms for discrete output(s) FLB, FLC 7 ms +/- 0.5 ms for discrete output(s) FM 2 ms +/- 0.5 ms for analog output(s) RY, RC 7 ms +/- 0.5 ms for discrete output(s) |
| Accuracy | FM +/- 1 % for a temperature variation 60 °C VIA +/- 0.6 % for a temperature variation 60 °C VIB +/- 0.6 % for a temperature variation 60 °C |
| Linearity error | FM +/- 0.2 % for output VIA +/- 0.15 % of maximum value for input VIB +/- 0.15 % of maximum value for input |
| Analogue output number | 1 |
| Analogue output type | FM switch-configurable current 0...20 mA, impedance 500 Ohm, resolution 10 bits FM switch-configurable voltage 0...10 V DC, impedance 470 Ohm, resolution 10 bits |
| Discrete output number | 2 |
| Discrete output type | FLA, FLC configurable relay logic NO, electrical service life 100000 cycles FLB, FLC configurable relay logic NC, electrical service life 100000 cycles RY, RC configurable relay logic NO, electrical service life 100000 cycles |
| Minimum switching current | Configurable relay logic 3 mA at 24 V DC |
| Maximum switching current | FL, R on inductive load, 2 A at 250 V AC, cos phi = 0.4, L/R = 7 ms FL, R on inductive load, 2 A at 30 V DC, cos phi = 0.4, L/R = 7 ms FL, R on resistive load, 5 A at 250 V AC, cos phi = 1, L/R = 0 ms FL, R on resistive load, 5 A at 30 V DC, cos phi = 1, L/R = 0 ms |
| Discrete input type | F programmable 24 V DC, with level 1 PLC, impedance 3500 Ohm R programmable 24 V DC, with level 1 PLC, impedance 3500 Ohm RES programmable 24 V DC, with level 1 PLC, impedance 3500 Ohm |
| Discrete input logic | F, R, RES negative logic (sink), state 0 >= 16 V, state 1 <= 10 V F, R, RES positive logic (source), state 0 <= 5 V, state 1 >= 11 V |
| Acceleration and deceleration ramps | Automatic based on the load Linear adjustable separately from 0.01 to 3200 s |
| Braking to standstill | By DC injection |

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| Protection type | Drive against exceeding limit speed Drive against input phase loss Drive break on the control circuit Drive input phase breaks Drive line supply overvoltage and undervoltage Drive line supply undervoltage Drive overcurrent between output phases and earth Drive overheating protection Drive overvoltages on the DC bus Drive short-circuit between motor phases Drive thermal power stage Motor motor phase break Motor thermal protection Motor with PTC probes |
| Insulation resistance | >= 1 MOhm at 500 V DC for 1 minute |
| Frequency resolution | Analog input 0.024/50 Hz Display unit 0.1 Hz |
| Connector type | 1 RJ45 |
| Physical interface | 2-wire RS 485 |
| Transmission frame | RTU |
| Transmission rate | 9600 bps or 19200 bps |
| Data format | 8 bits, 1 stop, odd even or no configurable parity |
| Number of addresses | 1...247 |
| Communication service | Monitoring inhibitable Read device identification (43) Read holding registers (03) 2 words maximum Time out setting from 0.1 to 100 s Write multiple registers (16) 2 words maximum Write single register (06) |
| Marking | CE |
| Operating position | Vertical +/- 10 degree |
| Height | 232 mm |
| Width | 180 mm |
| Depth | 170 mm |
| Product weight | 6.45 kg |

Environment

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| Noise level | 51 dB conforming to 86/188/EEC |
| Dielectric strength | 3535 V DC between earth and power terminals 5092 V DC between control and power terminals |
| Electromagnetic compatibility | 1.2/50 μ s - 8/20 μ s surge immunity test IEC 61000-4-5 level 3 Conducted radio-frequency immunity test conforming to IEC 61000-4-6 level 3 Electrical fast transient/burst immunity test conforming to IEC 61000-4-4 level 4 Electrostatic discharge immunity test conforming to IEC 61000-4-2 level 3 Radiated radio-frequency electromagnetic field immunity test conforming to IEC 61000-4-3 level 3 Voltage dips and interruptions immunity test conforming to IEC 61000-4-11 |
| Standards | EN 55011 class A group 1 EN 61800-3 EN 61800-3 category C2 EN 61800-3 category C3 EN 61800-3 environments 1 category C1 EN 61800-3 environments 1 category C2 EN 61800-3 environments 1 category C3 EN 61800-3 environments 2 category C1 EN 61800-3 environments 2 category C2 EN 61800-3 environments 2 category C3 EN 61800-5-1 IEC 61800-3 IEC 61800-3 category C2 IEC 61800-3 category C3 IEC 61800-3 environments 1 category C1 IEC 61800-3 environments 1 category C2 IEC 61800-3 environments 1 category C3 IEC 61800-3 environments 2 category C1 IEC 61800-3 environments 2 category C2 IEC 61800-3 environments 2 category C3 IEC 61800-5-1 UL Type 1 |
| Product certifications | CSA C-Tick NOM 117 UL |
| Vibration resistance | 1 gn (f = 13...200 Hz) conforming to EN/IEC 60068-2-8 1.5 mm (f = 3...13 Hz) conforming to EN/IEC 60068-2-6 |
| Shock resistance | 15 gn for 11 ms conforming to IEC 60068-2-27 |
| Pollution degree | 3 conforming to IEC 61800-5-1 |
| Environmental characteristic | Classes 3C1 conforming to IEC 60721-3-3 Classes 3S2 conforming to IEC 60721-3-3 |
| Relative humidity | 5...95 % without condensation conforming to IEC 60068-2-3 5...95 % without dripping water conforming to IEC 60068-2-3 |
| Ambient air temperature for operation | > 50 °C with derating -10...40 °C without derating |
| Ambient air temperature for storage | -25...70 °C |
| Operating altitude | <= 2000 m 1000...3000 m limited to 2000 m for the Corner Grounded distribution network |
| RoHS EUR status | Compliant |
| RoHS EUR conformity date | 0808 |