

ATV71HU15N4

variable speed drive ATV71 - 1.5kW 2HP - 480V



Main

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| Range of product | Altivar 71 |
| Product or component type | Variable speed drive |
| Product specific application | Complex, high-power machines |
| Assembly style | With heat sink |
| Component name | ATV71 |
| EMC filter | Integrated |
| Network number of phases | 3 phases |
| Power supply voltage | 380...480 V (- 15...10 %) |
| Motor power kW | 1.5 kW at 380...480 V 3 phases |
| Motor power hp | 2 hp at 380...480 V 3 phases |
| Line current | 5.3 A for 480 V 3 phases 1.5 kW / 2 hp 5.8 A for 380 V 3 phases 1.5 kW / 2 hp |
| Apparent power | 3.8 kVA at 380 V 3 phases 1.5 kW / 2 hp |
| Prospective line I _{sc} | ≤ 5 kA , 3 phases |
| Nominal output current | 3.4 A at 4 kHz 460 V 3 phases 1.5 kW / 2 hp 4.1 A at 4 kHz 380 V 3 phases 1.5 kW / 2 hp |
| Maximum transient current | 6.2 A for 60 s 3 phases 1.5 kW / 2 hp 6.8 A for 2 s 3 phases 1.5 kW / 2 hp |
| Speed drive output frequency | 0...1600 Hz |
| Nominal switching frequency | 4 kHz |
| Switching frequency | 1...16 kHz adjustable 4...16 kHz with derating factor |
| Asynchronous motor control profile | ENA (Energy adaptation) system for unbalanced loads Flux vector control (FVC) with sensor (current vector) Sensorless flux vector control (SFVC) (voltage or current vector) Voltage/Frequency ratio (2 or 5 points) |
| Type of polarization | No impedance for Modbus |

Complementary

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| Product destination | Asynchronous motors Synchronous motors |
| Power supply voltage limits | 323...528 V |
| Power supply frequency | 50...60 Hz (- 5...5 %) |
| Power supply frequency limits | 47.5...63 Hz |
| Speed range | 1...100 for asynchronous motor in open-loop mode, without speed feedback 1...1000 for asynchronous motor in closed-loop mode with encoder feedback 1...50 for synchronous motor in open-loop mode, without speed feedback |
| Speed accuracy | +/- 0.01 % of nominal speed for 0.2 T _n to T _n torque variation in closed-loop mode with encoder feedback +/- 10 % of nominal slip for 0.2 T _n to T _n torque variation without speed feedback |
| Torque accuracy | +/- 15 % in open-loop mode, without speed feedback +/- 5 % in closed-loop mode with encoder feedback |
| Transient overtorque | 170 % of nominal motor torque +/- 10 % for 60 s 220 % of nominal motor torque +/- 10 % for 2 s |
| Braking torque | 30 % without braking resistor < 150 % with braking or hoist resistor |

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| Synchronous motor control profile | Vector control without speed feedback |
| Regulation loop | Adjustable PI regulator |
| Motor slip compensation | Adjustable Automatic whatever the load Not available in voltage/frequency ratio (2 or 5 points) Suppressable |
| Diagnostic | 1 LED red presence of drive voltage |
| Output voltage | <= power supply voltage |
| Insulation | Electrical between power and control |
| Type of cable for mounting in an enclosure | With a NEMA Type1 kit: 3-strand UL 508 cable at 40 °C, copper 75 °C PVC With an IP21 or an IP31 kit: 3-strand IEC cable at 40 °C, copper 70 °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 | AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR terminal 2.5 mm ² / AWG 14 L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB terminal 4 mm ² / AWG 10 |
| Tightening torque | AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR 0.6 N.m L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB 1.4 N.m / 12.3 lb.in |
| Supply | Internal supply , 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) , 10.5 V DC +/- 5 % , ≤ 10 mA for overload and short-circuit protection |
| Analogue input number | 2 |
| Analogue input type | AI1-/AI1+ bipolar differential voltage +/- 10 V DC , input voltage 24 V max , resolution 11 bits + sign AI2 software-configurable current 0...20 mA , impedance 242 Ohm , resolution 11 bits AI2 software-configurable voltage 0...10 V DC , input voltage 24 V max , impedance 30000 Ohm , resolution 11 bits |
| Input sampling time | AI1-/AI1+ 2 ms , +/- 0.5 ms for analog input(s) AI2 2 ms , +/- 0.5 ms for analog input(s) LI1...LI5 2 ms , +/- 0.5 ms for discrete input(s) LI6 (if configured as logic input) 2 ms , +/- 0.5 ms for discrete input(s) |
| Response time | AO1 2 ms , tolerance +/- 0.5 ms for analog output(s) R1A, R1B, R1C 7 ms , tolerance +/- 0.5 ms for discrete output(s) R2A, R2B 7 ms , tolerance +/- 0.5 ms for discrete output(s) <= 100 ms in STO (Safe Torque Off) |
| Absolute accuracy precision | AI1-/AI1+ +/- 0.6 % for a temperature variation 60 °C AI2 +/- 0.6 % for a temperature variation 60 °C AO1 +/- 1 % for a temperature variation 60 °C |
| Linearity error | AI1-/AI1+, AI2 +/- 0.15 % of maximum value AO1 +/- 0.2 % |
| Analogue output number | 1 |
| Analogue output type | AO1 software-configurable logic output 10 V ≤ 20 mA AO1 software-configurable voltage 0...10 V DC , impedance 470 Ohm , resolution 10 bits AO1 software-configurable current 0...20 mA , impedance 500 Ohm , resolution 10 bits |
| Discrete output number | 2 |
| Discrete output type | R1A, R1B, R1C configurable relay logic NO/NC , electrical durability 100000 cycles R2A, R2B configurable relay logic NO , electrical durability 100000 cycles |
| Minimum switching current | Configurable relay logic 3 mA at 24 V DC |
| Maximum switching current | R1, R2 on resistive load, 5 A at 250 V AC, cos phi = 1, R1, R2 on resistive load, 5 A at 30 V DC, cos phi = 1, R1, R2 on inductive load, 2 A at 250 V AC, cos phi = 0.4, R1, R2 on inductive load, 2 A at 30 V DC, cos phi = 0.4, |
| Discrete input number | 7 |
| Discrete input type | LI1...LI5 programmable 24 V DC , with level 1 PLC , impedance 3500 Ohm LI6 switch-configurable 24 V DC , with level 1 PLC , impedance 3500 Ohm LI6 switch-configurable PTC probe 0...6 , impedance 1500 Ohm PWR safety input 24 V DC , impedance 1500 Ohm |
| Discrete input logic | LI1...LI5 negative logic (sink) , > 16 V (state 0) , < 10 V (state 0) LI1...LI5 positive logic (source) , < 5 V (state 0) , > 11 V (state 0) LI6 (if configured as logic input) negative logic (sink) , > 16 V (state 0) , < 10 V (state 0) LI6 (if configured as logic input) positive logic (source) , < 5 V (state 0) , > 11 V (state 0) PWR , < 2 V (state 0) , > 17 V (state 0) |

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| Acceleration and deceleration ramps | S, U or customized Automatic adaptation of ramp if braking capacity exceeded, by using resistor Linear adjustable separately from 0.01 to 9000 s |
| Braking to standstill | By DC injection |
| Protection type | Drive overheating protection Drive thermal protection Drive short-circuit between motor phases Drive input phase breaks Drive overcurrent between output phases and earth Drive overvoltages on the DC bus Drive break on the control circuit Drive against exceeding limit speed Drive line supply undervoltage Drive line supply overvoltage Drive against input phase loss Motor thermal protection Motor motor phase break Motor power removal |
| Insulation resistance | > 1 MOhm at 500 V DC for 1 minute to earth |
| Frequency resolution | Analog input 0.024/50 Hz Display unit 0.1 Hz |
| Communication port protocol | CANopen Modbus |
| Type of connector | 1 RJ45 for Modbus on front face 1 RJ45 for Modbus on terminal Male SUB-D 9 on RJ45 for CANopen |
| Physical interface | 2-wire RS 485 for Modbus |
| Transmission frame | RTU for Modbus |
| Transmission rate | 20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps for CANopen 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps for Modbus on terminal 9600 bps, 19200 bps for Modbus on front face |
| Data format | 8 bits, 1 stop, even parity for Modbus on front face 8 bits, odd even or no configurable parity for Modbus on terminal |
| Number of addresses | 1...127 for CANopen 1...247 for Modbus |
| Method of access | Slave for CANopen |
| Marking | CE |
| Operating position | Vertical +/- 10 degree |
| Product weight | 3 kg |
| Option card | CC-Link communication card DeviceNet communication card Ethernet/IP communication card Fipio communication card Interbus-S communication card Modbus/Uni-Telway communication card Modbus Plus communication card Modbus TCP communication card Profibus DP communication card Profibus DP V1 communication card Interface card for encoder I/O extension card Controller inside programmable card Overhead crane card |

Environment

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| Noise level | 43 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 conforming to 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/IEC 61800-3 EN/IEC 61800-5-1 EN 55011 class A group 1 EN 61800-3 environments 1 category C2 EN 61800-3 environments 2 category C2 IEC 60721-3-3 class 3C1 IEC 60721-3-3 class 3S2 UL Type 1 |
| Product certifications | C-Tick CSA GOST NOM 117 UL |
| Pollution degree | 2 conforming to EN/IEC 61800-5-1 |
| IP degree of protection | IP20 on upper part without blanking plate on cover conforming to EN/IEC 61800-5-1 IP20 on upper part without blanking plate on cover conforming to EN/IEC 60529 IP21 conforming to EN/IEC 61800-5-1 IP21 conforming to EN/IEC 60529 IP41 on upper part conforming to EN/IEC 61800-5-1 IP41 on upper part conforming to EN/IEC 60529 IP54 on lower part conforming to EN/IEC 61800-5-1 IP54 on lower part conforming to EN/IEC 60529 |
| Vibration resistance | 1 gn (f = 13...200 Hz) conforming to EN/IEC 60068-2-6 1.5 mm peak to peak (f = 3...13 Hz) conforming to EN/IEC 60068-2-6 |
| Shock resistance | 15 gn for 11 ms conforming to EN/IEC 60068-2-27 |
| 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 | -10...50 °C without derating |
| Ambient air temperature for storage | -25...70 °C |
| Operating altitude | 1000...3000 m with current derating 1 % per 100 m \leq 1000 m without derating |
| RoHS EUR conformity date | 4Q2009 |
| RoHS EUR status | Will be compliant |