Product data sheet
Characteristics

ATV71LD33N4Z
variable speed drive Altivar Lift, 15 kW 20 Hp, 380...480 V three-phase, EMC filter, with heat sink

Main

Device short name	ATV71
Product destination	Asynchronous motors Synchronous motors
Network number of phases	3 phases
Supply voltage limits	323…528 V
Supply frequency	50...60 Hz - 5...5 %
Motor power kW	15 kW, 3 phases at 380...480 V
Motor power hp	20 hp, 3 phases at 380...480 V
Line current	48 A for 380 V 3 phases 15 kW / 20 hp 39 A for 480 V 3 phases 15 kW / 20 hp
Range of product	Altivar Lift
Product or component type	Variable speed drive
Product specific application	Lift
Variant	With integrated 7-segment display terminal
Communication port protocol	Modbus CANopen
[Us] rated supply voltage	380...480 V - 15...10 %
EMC filter	Integrated

Complementary

Apparent power	31.6 kVA at 380 V 3 phases 15 kW / 20 hp
Prospective line Isc	22 kA for 3 phases
Nominal output current	33 A at 4 kHz 380 V 3 phases 15 kW / 20 hp 27 A at 4 kHz 460 V 3 phases 15 kW / 20 hp
Maximum transient current	44.9 A for 2 s 3 phases / 15 kW / 20 hp
Speed drive output frequency	0…599 Hz
Speed range	1…100 for asynchronous motor in open-loop mode, without speed feedback 1…50 for synchronous motor in open-loop mode, without speed feedback 1…1000 for asynchronous motor in closed-loop mode with encoder feedback
Torque accuracy	+/- 5 % in closed-loop mode with encoder feedback +/- 15 % in open-loop mode, without speed feedback
Transient overtorque	170 %, +/- 10 % for 60 s 220 %, +/- 10 % for 2 s
Braking torque	30 % without braking resistor <= 150 % with braking or hoist resistor
Local signalling	1 LED (red) for drive voltage
Output voltage	<= power supply voltage
Insulation	Electrical between power and control
Type of cable for external connection	Without mounting kit: 1 wire(s)IEC cable at 45 °C, copper 90 °C / XLPE/EPR Without mounting kit: 1 wire(s)IEC cable at 45 °C, copper 70 °C / PVC With an IP21 or an IP31 kit: 3 wire(s)IEC cable at 40 °C, copper 70 °C / PVC With a NEMA Type1 kit: 3 wire(s)UL 508 cable at 40 °C, copper 75 °C / PVC
Electrical connection	Terminal, clamping capacity: 2.5 mm², AWG 14 (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR) Terminal, clamping capacity: 35 mm², AWG 2 (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)
Tightening torque	5.4 N.M, 47.7 lb.in (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB) 0.6 N.m (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR)

Supply	Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 A, protection type: overload and short-circuit protection Internal supply: 24 V DC (21…27 V), <200 A, protection type: overload and short-circuit protection
Sampling duration	2 Ms +/- 0.5 ms (LI6)if configured as logic input - discrete input(s) 2 Ms +/- 0.5 ms (LI1...LI5) - discrete input(s) 2 Ms +/- 0.5 ms (AI1-/AI1+) - analog input(s) 2 ms +/- 0.5 ms (AI2) - analog input(s)
Response time	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) AO1 2 ms, tolerance +/- 0.5 ms for analog output(s) <= 100 ms in STO (Safe Torque Off)
Accuracy	+/- 0.6 % (AI1-/AI1+) for a temperature variation 60 °C +/- 0.6 % (AI2) for a temperature variation 60 °C +/- 1 % (AO1) for a temperature variation 60 °C
Linearity error	+/- 0.15 % of maximum value (AI1-/AI1+, AI2) +/- 0.2 % (AO1)
Analogue output type	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 AO1 software-configurable logic output 10 V 20 A
Discrete output type	Configurable relay logic: (R1A, R1B, R1C) NO/NC - 100000 cycles Configurable relay logic: (R2A, R2B) NO - 100000 cycles
Minimum switching current	3 mA at 24 V DC for configurable relay logic
Maximum switching current	5 A at 250 V AC on resistive load - cos phi = 1 - L/R = 0 ms (R1, R2) 5 A at 30 V DC on resistive load - cos phi = 1 - L/R = 0 ms (R1, R2) 2 A at 250 V AC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1, R2) 2 A at 30 V DC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1, R2)
Discrete input type	Programmable (LI1...LI5)24 V DC, with level 1 PLC - 3500 Ohm Switch-configurable (LI6)24 V DC, with level 1 PLC - 3500 Ohm Switch-configurable PTC probe (LI6) - 0…6 probes - 1500 Ohm Safety input (PWR)24 V DC - 1500 Ohm
Discrete input logic	Positive logic (LI6)if configured as logic input, < 5 V (state 0), > 11 V (state 1) Negative logic (LI6)if configured as logic input, > 16 V (state 0), < 10 V (state 1) Positive logic (LI1...LI5), < 5 V (state 0), > 11 V (state 1) Negative logic (LI1...LI5), > 16 V (state 0), < 10 V (state 1) Positive logic (PWR), < 2 V (state 0), > 17 V (state 1)
Dielectric strength	3535 V DC between earth and power terminals 5092 V DC between control and power terminals
Insulation resistance	> 1 mOhm 500 V DC for 1 minute to earth
Frequency resolution	Display unit: 0.1 Hz Analog input: 0.024/50 Hz
Connector type	1 RJ45 (on front face) for Modbus 1 RJ45 (on terminal) for Modbus Male SUB-D 9 on RJ45 for CANopen
Physical interface	2-wire RS 485 for Modbus
Transmission frame	RTU for Modbus
Transmission rate	9600 bps, 19200 bps for Modbus on front face 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps for Modbus on terminal 20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps for CANopen
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
Type of polarization	No impedance for Modbus
Number of addresses	1…247 for Modbus 1…127 for CANopen
Control options	Communication card for Modbus TCP Communication card for Fipio Communication card for Modbus/Uni-Telway Communication card for Modbus Plus Communication card for EtherNet/IP Communication card for DeviceNet Communication card for Profibus DP Communication card for Profibus DP V1 Communication card for Interbus-S Communication card for CC-Link Interface card for encoder I/O extension card Controller inside programmable card Overhead crane card
Discrete input number	7

Discrete output number	2
Analogue input number	2
Analogue input type	AI2 software-configurable voltage: 0...10 V DC 24 V max, impedance: 30000 Ohm, resolution 11 bits AI1-/AI1+ bipolar differential voltage: +/- 10 V DC 24 V max, resolution 11 bits + sign AI2 software-configurable current: 0...20 mA, impedance: 242 Ohm, resolution 11 bits
Analogue output number	1
Method of access	Slave CANopen
Asynchronous motor control profile	Voltage/Frequency ratio - Energy Saving, quadratic U/f Flux vector control without sensor, standard Flux vector control without sensor, ENA (energy Adaptation) system Voltage/Frequency ratio, 5 points Flux vector control with sensor, standard Voltage/Frequency ratio, 2 points Flux vector control without sensor, 2 points
Synchronous motor control profile	Vector control without sensor, standard Vector control with sensor, standard
Acceleration and deceleration ramps	S, U or customized Linear adjustable separately from 0.01 to 9000 s Automatic adaptation of ramp if braking capacity exceeded, by using resistor
Motor slip compensation	Automatic whatever the load Not available in voltage/frequency ratio (2 or 5 points) Suppressable Adjustable
Switching frequency	1...16 kHz adjustable
Nominal switching frequency	8 kHz
Minimum braking resistance	7 Ohm
Network frequency	47.5...63 Hz
Protection type	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: drive Thermal protection: motor Motor phase break: motor Power removal: motor

Environment

Pollution degree	2 conforming to IEC 61800-5-1
IP degree of protection	IP20 on upper part without blanking plate on cover conforming to IEC 61800-5-1 IP20 on upper part without blanking plate on cover conforming to IEC 60529 IP21 conforming to IEC 61800-5-1 IP21 conforming to IEC 60529 IP41 on upper part conforming to IEC 61800-5-1 IP41 on upper part conforming to IEC 60529 IP54 on lower part conforming to IEC 61800-5-1 IP54 on lower part conforming to IEC 60529
Vibration resistance	1.5 mm peak to peak (f= 3…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
Noise level	60.2 dB conforming to 86/188/EEC
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)
Operating altitude	<= 1000 m without derating 1000...3000 m with current derating 1 % per 100 m
Operating position	Vertical +/- 10 degree
Product certifications	C-Tick[RETURN]CSA[RETURN]GOST[RETURN]UL[RETURN]NOM 117
Marking	CE

Standards	EN 55011 class A group 2 IEC 61800-3 environments 1 category C3 IEC 61800-5-1 IEC 61800-3 environments 2 category C3 IEC 60721-3-3 class 3C1 UL Type 1 IEC 60721-3-3 class 3S2 IEC 61800-3
Assembly style	With heat sink
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 Voltage dips and interruptions immunity test conforming to IEC 61000-4-11
Regulation loop	Adjustable PI regulator
Speed accuracy	+/- 0.01 % of nominal speed in closed-loop mode with encoder feedback 0.2 Tn to Tn +/- 10 % of nominal slip without speed feedback 0.2 Tn to Tn
Ambient air temperature for storage	-25…70 °C

Offer Sustainability

REACh Regulation	REACh Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope)
Mercury free	Yes
China RoHS Regulation	China RoHS Declaration
RoHS exemption information	Yes
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins