

# ATV71LD48N4Z

variable speed drive Altivar Lift, 22 kW 30 Hp,  
380...480 V three-phase, EMC filter, with heat  
sink



## Main

Range of product	Altivar Lift
Product or component type	Variable speed drive
Device short name	ATV71
Product destination	Synchronous motors Asynchronous motors
Product specific application	Lift
Assembly style	With heat sink
Variant	With integrated 7-segment display terminal
EMC filter	Integrated
Network number of phases	3 phases
[Us] rated supply voltage	380...480 V - 15...10 %
Supply voltage limits	323...528 V
Supply frequency	50...60 Hz - 5...5 %
Motor power kW	22 kW, 3 phases at 380...480 V
Motor power hp	30 hp, 3 phases at 380...480 V
Line current	50 A for 380 V 3 phases 22 kW / 30 hp 42 A for 480 V 3 phases 22 kW / 30 hp

## Complementary

Apparent power	32.9 kVA at 380 V 3 phases 22 kW / 30 hp
Prospective line I <sub>sc</sub>	22 kA for 3 phases
Nominal output current	48 A at 4 kHz 380 V 3 phases 22 kW / 30 hp 40 A at 4 kHz 460 V 3 phases 22 kW / 30 hp
Maximum transient current	65.3 A for 2 s 3 phases / 22 kW / 30 hp
Speed drive output frequency	0...599 Hz
Minimum braking resistance	13.3 Ohm

Nominal switching frequency	8 kHz
Switching frequency	1...16 kHz adjustable
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
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
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
Asynchronous motor control profile	Voltage/frequency ratio, 2 points Flux vector control without sensor, 2 points Flux vector control with sensor, standard 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
Synchronous motor control profile	Vector control without sensor, standard Vector control with sensor, standard
Regulation loop	Adjustable PI regulator
Motor slip compensation	Suppressable Not available in voltage/frequency ratio (2 or 5 points) Automatic whatever the load Adjustable
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 mm <sup>2</sup> , AWG 14 (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR) Terminal, clamping capacity: 50 mm <sup>2</sup> , AWG 1/0 (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)
Tightening torque	12 N.m, 102.2 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
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
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 number	1
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 number	2
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 number	7
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)
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
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
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
Communication port protocol	CANopen Modbus
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
Method of access	Slave 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

Operating position	Vertical +/- 10 degree
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## Environment

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 $\mu$ s - 8/20 $\mu$ s 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
Pollution degree	2 conforming to EN/IEC 61800-5-1 3 conforming to UL 840
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	1.5 mm peak to peak ( $f= 3...13$ Hz) conforming to EN/IEC 60068-2-6 1 gn ( $f= 13...200$ Hz) conforming to EN/IEC 60068-2-6
Shock resistance	15 gn for 11 ms conforming to EN/IEC 60068-2-27
Noise level	59.9 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)
Ambient air temperature for storage	-25...70 °C
Operating altitude	<= 1000 m without derating 1000...3000 m with current derating 1 % per 100 m
Standards	EN 61800-3 environments 1 category C3 IEC 60721-3-3 class 3S2 IEC 60721-3-3 class 3C1 UL Type 1 EN 55011 class A group 2 EN 61800-3 environments 2 category C3 EN/IEC 61800-5-1 EN/IEC 61800-3
Product certifications	UL NOM 117 CSA C-Tick
Marking	CE

## Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Weight	28.5 kg
Package 1 Height	29.5 cm
Package 1 width	40 cm
Package 1 Length	70 cm
Unit Type of Package 2	P06
Number of Units in Package 2	1
Package 2 Weight	37 kg
Package 2 Height	77 cm
Package 2 width	80 cm
Package 2 Length	60 cm

## Offer Sustainability

Sustainable offer status	Green Premium product
REACH Regulation	<a href="#">REACH Declaration</a>
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
Mercury free	Yes
RoHS exemption information	<a href="#">Yes</a>
China RoHS Regulation	<a href="#">China RoHS declaration</a>
Environmental Disclosure	<a href="#">Product Environmental Profile</a>
Circularity Profile	<a href="#">End of Life Information</a>
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins

## Contractual warranty

Warranty	18 months
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