



Main

Range of product	Altivar 61
Product or component type	Variable speed drive
Product specific application	Pumping and ventilation machine
Component name	ATV61
Motor power kW	1.5 kW single phase at 200...240 V 2.2 kW 3 phases at 200...240 V
Motor power hp	2 hp single phase at 200...240 V 3 hp 3 phases at 200...240 V
[Us] rated supply voltage	200...240 V (- 15...10 %)
Phase	3 phases Single phase
Line current	12.8 A for 240 V 3 phases 2.2 kW / 3 hp 15 A for 200 V 3 phases 2.2 kW / 3 hp 15.7 A for 240 V single phase 1.5 kW / 2 hp 18.2 A for 200 V single phase 1.5 kW / 2 hp
EMC filter	Class C2 EMC filter integrated
Assembly style	With heat sink
Apparent power	3.7 kVA for 240 V single phase 1.5 kW / 2 hp 5.3 kVA for 240 V 3 phases 2.2 kW / 3 hp
Prospective line I _{sc}	5 kA 3 phases 5 kA single phase
Maximum transient current	9.6 A for 60 s single phase 13.2 A for 60 s 3 phases
Nominal switching frequency	12 kHz
Switching frequency	1...16 kHz adjustable 12...16 kHz with derating factor
Asynchronous motor control profile	Voltage/frequency ratio, 2 points Voltage/frequency ratio, 5 points Flux vector control without sensor, standard Voltage/frequency ratio - Energy Saving, quadratic U/f
Synchronous motor control profile	Vector control without sensor, standard
Communication port protocol	CANopen Modbus
Type of polarization	No impedance Modbus
Option card	APOGEE FLN communication card BACnet communication card CC-Link communication card Controller inside programmable card DeviceNet communication card Ethernet/IP communication card Fipio communication card I/O extension card Interbus-S communication card LonWorks communication card METASYS N2 communication card Modbus Plus communication card Modbus TCP communication card Modbus/Uni-Telway communication card Multi-pump card Profibus DP communication card Profibus DP V1 communication card

Complementary

Product destination	Asynchronous motors Synchronous motors
Supply voltage limits	170...264 V
Supply frequency	50...60 Hz (- 5...5 %)

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Network frequency	47.5...63 Hz
Continuous output current	11 Aat 12 kHz, 230 V 3 phases 8 Aat 12 kHz, 230 V single phase
Output frequency	0.1...599 Hz
Speed range	1...100 in open-loop mode, without speed feedback
Speed accuracy	+/- 10 % of nominal slip 0.2 Tn to Tn torque variation without speed feedback
Torque accuracy	+/- 15 % in open-loop mode, without speed feedback
Transient overtorque	130 % of nominal motor torque, +/- 10 %for 60 s
Braking torque	30 % without braking resistor <= 125 % with braking resistor
Regulation loop	Frequency PI regulator
Motor slip compensation	Adjustable Automatic whatever the load Can be suppressed Not available in voltage/frequency ratio (2 or 5 points)
Local signalling	1 LED red presence of drive voltage
Output voltage	<= power supply voltage
Isolation	Between power and control terminals
Type of cable	With an IP21 or an IP31 kit: 3-strand IEC cableat 104 °F (40 °C), copper 70 °C PVC Without mounting kit: 1-strand IEC cableat 113 °F (45 °C), copper 70 °C PVC Without mounting kit: 1-strand IEC cableat 113 °F (45 °C), copper 90 °C XLPE/EPR With UL Type 1 kit: 3-strand UL 508 cableat 104 °F (40 °C), copper 75 °C PVC
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 6 mm ² / AWG 8
Tightening torque	AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR 5.31 lbf.in (0.6 N.m) L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB 12.39 lbf.in (1.4 N.m) / 12.3 lb.in
Supply	Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 %, <= 10 mAfor overload and short-circuit protection Internal supply 24 V DC (21...27 V), <= 200 mAfor overload and short-circuit protection External supply 24 V DC (19...30 V)
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
Sampling duration	Analog input AI1-/AI1+ 2 ms, +/- 0.5 ms Analog input AI2 2 ms, +/- 0.5 ms Analog output AO1 2 ms, +/- 0.5 ms Discrete input LI1...LI5 2 ms, +/- 0.5 ms Discrete input LI6 (if configured as logic input) 2 ms, +/- 0.5 ms
Accuracy	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+ +/- 0.15 % of maximum value AI2 +/- 0.15 % of maximum value AO1 +/- 0.2 %
Analogue output number	1
Analogue output type	AO1 software-configurable current, analogue output range 0...20 mA, impedance 500 Ohm, resolution 10 bits AO1 software-configurable logic output 10 V, <= 20 mA AO1 software-configurable voltage, analogue output range 0...10 V DC, impedance 470 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
Response time	<= 100 ms in STO (Safe Torque Off) R1A, R1B, R1C <= 7 ms, tolerance +/- 0.5 ms R2A, R2B <= 7 ms, tolerance +/- 0.5 ms
Minimum switching current	Configurable relay logic 3 mAat 24 V DC
Maximum switching current	R1, R2 on resistive load, 5 A at 30 V DC, cos phi = 1, 0 ms R1, R2 on inductive load, 2 A at 30 V DC, cos phi = 0.4, 7 ms R1, R2 on resistive load, 5 A at 250 V AC, cos phi = 1, 0 ms R1, R2 on inductive load, 2 A at 250 V AC, cos phi = 0.4, 7 ms
Discrete input number	7

Discrete input type	(LI1...LI5) programmable, 24 V DC, voltage limits ≤ 30 V, with level 1 PLC, impedance 3500 Ohm (LI6) switch-configurable, 24 V DC, voltage limits ≤ 30 V, with level 1 PLC, impedance 3500 Ohm (LI6) switch-configurable PTC probe, 0..6, impedance 1500 Ohm (PWR) safety input, 24 V DC, voltage limits ≤ 30 V, impedance 1500 Ohm
Discrete input logic	LI1...LI5 positive logic (source), < 5 V (state 0), > 11 V (state 1) LI1...LI5 negative logic (sink), > 16 V (state 0), < 10 V (state 1) LI6 (if configured as logic input) negative logic (sink), > 16 V (state 0), < 10 V (state 1) LI6 (if configured as logic input) positive logic (source), < 5 V (state 0), > 11 V (state 1)
Acceleration and deceleration ramps	Automatic adaptation of ramp if braking capacity exceeded, by using resistor Linear adjustable separately from 0.01 to 9000 s S, U or customized
Braking to standstill	By DC injection
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 Drive line supply undervoltage Drive overcurrent between output phases and earth Drive overheating protection Drive overvoltages on the DC bus Drive power removal Drive short-circuit between motor phases Drive thermal protection Motor motor phase break Motor power removal Motor thermal protection
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
Connector type	1 RJ45 Modbus on front face 1 RJ45 Modbus on terminal Male SUB-D 9 on RJ45 CANopen
Physical interface	2-wire RS 485 Modbus
Transmission frame	RTU Modbus
Transmission rate	20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps CANopen 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps Modbus on terminal 9600 bps, 19200 bps Modbus on front face
Data format	8 bits, 1 stop, even parity Modbus on front face 8 bits, odd even or no configurable parity Modbus on terminal
Number of addresses	1...247 Modbus 1...127 CANopen
Method of access	Slave CANopen
Marking	CE
Operating position	Vertical +/- 10 degree
Product weight	8.82 lb(US) (4 kg)
Width	6.1 in (155 mm)
Height	10.24 in (260 mm)
Depth	7.36 in (187 mm)

Environment

noise level	54.5 dB conforming to 86/188/EEC
dielectric strength	2830 V DC between earth and power terminals 4230 V DC between control and power terminals
electromagnetic compatibility	Conforming to IEC 61000-4-2 level 3 Conforming to IEC 61000-4-11 Conforming to IEC 61000-4-6 level 3 Conforming to IEC 61000-4-3 level 3 Conforming to IEC 61000-4-4 level 4
standards	EN 55011 class A group 1 EN 61800-3 environments 1 category C2 EN 61800-3 environments 2 category C2 EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 60721-3-3 class 3C1

IEC 60721-3-3 class 3S2
UL Type 1

product certifications	CSA C-Tick DNV 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 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 IP54 on lower part conforming to EN/IEC 60529 IP54 on lower part conforming to EN/IEC 61800-5-1
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 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	14...122 °F (-10...50 °C) without derating 122...140 °F (50...60 °C) with derating factor
ambient air temperature for storage	-13...158 °F (-25...70 °C)
operating altitude	<= 3280.84 ft (1000 m) without derating 3280.84...9842.52 ft (1000...3000 m) with current derating 1 % per 100 m

Contractual warranty

Warranty period	18 months
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