Product data sheet
Characteristics

ATV61HD15N4
variable speed drive, ATV61, 20 HP, 380 to 480 V 3 phase, EMC IP20 with graphic terminal



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	15 kW, 3 phase 380...480 V
Maximum Horse Power Rating	20 hp, 3 phase 380...480 V
Power supply voltage	380...480 V - 15...10 %
Supply number of phases	3 phase
Line current	39 A 480 V 3 phase 15 kW / 20 hp 48 A 380 V 3 phase 15 kW / 20 hp
EMC filter	Level 3 EMC filter
Assembly style	With heat sink
Apparent power	31.6 kVA 380 V 3 phase 15 kW / 20 hp
Maximum prospective line Isc	22 kA 3 phase
Maximum transient current	39.6 A 60 s, 3 phase
Nominal switching frequency	12 kHz
Switching frequency	1...16 kHz adjustable 12...16 kHz with derating factor
Asynchronous motor control	Voltage/Frequency ratio - Energy Saving, quadratic U/f Flux vector control without sensor, standard Voltage/Frequency ratio, 2 points Voltage/frequency ratio, 5 points
Synchronous motor control profile	Vector control without sensor, standard
Communication Port Protocol	CANopen Modbus
Type of polarization	No impedance Modbus
Option card	Communication card APOGEE FLN Communication card BACnet Communication card CC-Link Controller inside programmable card Communication card DeviceNet Communication card EtherNet/IP Communication card Fipio I/O extension card Communication card Interbus-S Communication card LonWorks Communication card METASYS N2 Communication card Modbus Plus Communication card Modbus TCP Communication card Modbus/Uni-Telway Multi-pump card Communication card Profibus DP Communication card Profibus DP V1

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Complementary

Product destination	Synchronous motors Asynchronous motors
Power supply voltage limits	323…528 V
Power supply frequency	50...60 Hz - 5...5 %
Power supply frequency limits	47.5...63 Hz
Continuous output current	27 A 12 kHz, 460 V - 3 phase 33 A 12 kHz, 380 V - 3 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 without speed feedback
Torque accuracy	+/- 15 % in open-loop mode, without speed feedback
Transient overtorque	130 % of nominal motor torque +/- 10 % 60 s
Braking torque	<= 125 % with braking resistor 30 % without braking resistor
Regulation loop	Frequency PI regulator
Motor slip compensation	Can be suppressed Automatic whatever the load Not available in voltage/frequency ratio (2 or 5 points) Adjustable
Diagnostic	For drive voltage 1 LED (red)
Output voltage	<= power supply voltage
Electrical isolation	Between power and control terminals
Type of cable for mounting in an enclosure	With an IP21 or an IP31 kit 3 IEC cable 104 °F (40 °C), copper 70 °C / PVC With UL Type 1 kit 3 UL 508 cable 104 °F (40 °C), copper 75 °C / PVC Without mounting kit 1 IEC cable 113 °F (45 °C), copper 70 °C / PVC Without mounting kit 1 IEC cable 113 °F (45 °C), copper 90 °C / XLPE/EPR
Electrical connection	Terminal 2.5 mm² / AWG 14 AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR) Terminal 25 mm² / AWG 3 L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)
Tightening torque	5.31 Lbf.In (0.6 N.m) AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR) 47.79 lbf.in (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)
Supply	Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC, +/- 5 %, <10 mA overload and short-circuit protection Internal supply 24 V DC 21…27 V), <200 mA 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 24 V max 11 bits + sign AI2 software-configurable current 0...20 mA 242 Ohm 11 bits AI2 software-configurable voltage 0...10 V DC 24 V max 30000 Ohm 11 bits
Sampling time	2 Ms +/- 0.5 ms AI1-/AI1+) - analog input 2 Ms +/- 0.5 ms AI2) - analog input 2 Ms +/- 0.5 ms AO1) - analog output 2 Ms +/- 0.5 ms LI1...LI5) - discrete input 2 ms +/- 0.5 ms LI6)if configured as logic input - discrete input
Absolute accuracy precision	+/- 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+) +/- 0.15 % of maximum value AI2) +/- 0.2 % AO1)
Analogue output number	1
Analogue output type	AO1 software-configurable current 0...20 mA 500 Ohm 10 bits AO1 software-configurable voltage 0...10 V DC 470 Ohm 10 bits AO1 software-configurable logic output 10 V, 20 mA
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
Maximum response time	<= 100 ms in STO (Safe Torque Off) R1A, R1B, R1C <= 7 ms +/- 0.5 ms R2A, R2B <= 7 ms +/- 0.5 ms

Minimum switching current	3 mA 24 V DC configurable relay logic
Maximum switching current	R1, R2 2 A 250 V AC inductive, cos phi = 0.4 7 ms R1, R2 2 A 30 V DC inductive, cos phi = 0.4 7 ms R1, R2 5 A 250 V AC resistive, cos phi = 1 0 ms R1, R2 5 A 30 V DC resistive, cos phi = 1 0 ms
Discrete input number	7
Discrete input type	Programmable LI1...LI5) 24 V DC <= 30 V)level 1 PLC - 3500 Ohm Switch-configurable LI6) 24 V DC <= 30 V)level 1 PLC - 3500 Ohm Switch-configurable PTC probe LI6)0…6 - 1500 Ohm Safety input PWR) 24 V DC <= 30 V) - 1500 Ohm
Discrete input logic	Negative logic (sink) LI1...LI5), > 16 V, < 10 V Positive logic (source) LI1...LI5), < 5 V, > 11 V Negative logic (sink) LI6)if configured as logic input, > 16 V, < 10 V Positive logic (source) LI6)if configured as logic input, < 5 V, > 11 V
Acceleration and deceleration ramps	Automatic adaptation of ramp if braking capacity exceeded, by using resistor S, U or customized Linear adjustable separately from 0.01 to 9000 s
Braking to standstill	By DC injection
Protection type	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 drive Motor phase break motor Power removal motor Thermal protection motor
Insulation resistance	> 1 mOhm 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 on front face)Modbus 1 RJ45 on terminal)Modbus Male SUB-D 9 on RJ45CANopen
Physical interface	2-wire RS 485 Modbus
Transmission frame	RTU Modbus
Transmission rate	4800 bps, 9600 bps, 19200 bps, 38.4 Kbps Modbus on terminal 9600 bps, 19200 bps Modbus on front face 20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps CANopen
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…127 CANopen 1…247 Modbus
Method of access	Slave CANopen
Marking	CE
Operating position	Vertical +/- 10 degree
Net Weight	48.50 lb(US) (22 kg)
Width	9.06 in (230 mm)
Height	15.75 in (400 mm)
Depth	8.39 in (213 mm)

Environment

Noise level	60.2 dB 86/188/EEC
Dielectric strength	3535 V DC between earth and power terminals 5092 V DC between control and power terminals
Electromagnetic compatibility	Conducted radio-frequency immunity test level 3 IEC 61000-4-6 Electrical fast transient/burst immunity test level 4 IEC 61000-4-4 Electrostatic discharge immunity test level 3 IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3 Voltage dips and interruptions immunity test IEC 61000-4-11
Standards	EN/IEC 61800-3 EN 61800-3 environments 1 category C3 IEC 60721-3-3 class 3C1 EN/IEC 61800-5-1 EN 55011 class A group 2 UL Type 1 EN 61800-3 environments 2 category C3 IEC 60721-3-3 class 3S2
Product Certifications	C-tick UL CSA GOST DNV NOM 117
Pollution degree	2 EN/IEC 61800-5-1
Degree of proctection	IP20 on upper part without blanking plate on cover EN/IEC 60529 IP20 on upper part without blanking plate on cover EN/IEC 61800-5-1 IP21 EN/IEC 60529 IP21 EN/IEC 61800-5-1 IP41 on upper part EN/IEC 60529 IP41 on upper part EN/IEC 61800-5-1 IP54 on lower part EN/IEC 60529 IP54 on lower part EN/IEC 61800-5-1
Vibration resistance	1 gn 13…200 Hz)EN/IEC 60068-2-6 1.5 mm peak to peak 3…13 Hz)EN/IEC 60068-2-6
Shock resistance	15 gn 11 ms EN/IEC 60068-2-27
Relative humidity	5…95 % without condensation IEC 60068-2-3 5…95 % without dripping water 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

Ordering and shipping details

Category	22137 - ATV61 7.5 THRU 50 HP DRIVES
Discount Schedule	CP4C
GTIN	00785901525660
Nbr. of units in pkg.	1
Package weight(Lbs)	35 lb(US) (15.88 kg)
Returnability	No
Country of origin	ID

Packing Units

Package 1 Height	5.550 dm
Package 1 width	3.900 dm
Package 1 Length	3.900 dm

Contractual warranty

Warranty	18 months