



Main

Range of product	Altivar 21
Product or component type	Variable speed drive
Product destination	Asynchronous motors
Product specific application	Pumps and fans in HVAC
Assembly style	With heat sink
Component name	ATV21
EMC filter	Without EMC filter
[Us] rated supply voltage	200...240 V (- 15...10 %)
Phase	3 phases
Motor power kW	0.75 kW
Motor power hp	1 hp
Line current	2.7 A 240 V 3.3 A 200 V
Speed range	1...10
Transient overtorque	120 % of nominal motor torque +/- 10 % 60 s
Asynchronous motor control profile	Constant voltage/frequency ratio Current flux vector control (FVC) without speed feedback Energy saving ratio Quadratic voltage/frequency ratio Constant voltage/frequency ratio with automatic IR compensation
Communication port protocol	Modbus
Type of polarization	No impedance
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
Option card	APOGEE FLN communication card BACnet communication card LonWorks communication card METASYS N2 communication card

Complementary

Supply voltage limits	170...264 V
Supply frequency	50...60 Hz (- 5...5 %)
Network frequency limits	47.5...63 Hz
Apparent power	1.8 kVA 240 V
Prospective line I _{sc}	5 kA
Continuous output current	4.6 A at 230 V
Maximum transient current	5.1 A 60 s
Speed drive output frequency	0.5...200 Hz
Nominal switching frequency	12 kHz
Switching frequency	12...16 kHz with derating 6...16 kHz adjustable
Speed accuracy	+/- 10 % of nominal slip 0.2 T _n to T _n torque variation
Torque accuracy	+/- 15 %
Regulation loop	Adjustable PI regulator
Motor slip compensation	Adjustable

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	Automatic whatever the load Not available in voltage/frequency ratio motor control
Local signalling	1 LED red DC bus energized
Output voltage	<= power supply voltage
Insulation	Electrical between power and control
Type of cable	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	L1/R, L2/S, L3/T terminal 0.01 in ² (6 mm ²) / AWG 10 VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES terminal 0 in ² (2.5 mm ²) / AWG 14
Tightening torque	L1/R, L2/S, L3/T 11.5 lbf.in (1.3 N.m) / 11.5 lb.in VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES 5.31 lbf.in (0.6 N.m)
Supply	Internal supply for reference potentiometer (1 to 10 kOhm) at 10.5 V DC, tolerance +/- 5 % <= 10 mA overload and short-circuit protection Internal supply at 24 V DC, voltage limits 21...27 V <= 200 mA overload and short-circuit protection
Analogue input number	2
Analogue input type	VIA switch-configurable current 0...20 mA, impedance 242 Ohm, resolution 11 bits VIA switch-configurable voltage 0...10 V DC, input voltage 24 V max, impedance 30000 Ohm, resolution 11 bits VIB configurable PTC probe 0...6 probes, impedance 1500 Ohm VIB configurable voltage 0...10 V DC, input voltage 24 V max, impedance 30000 Ohm, resolution 11 bits
Sampling duration	F 2 ms +/- 0.5 ms discrete input(s) R 2 ms +/- 0.5 ms discrete input(s) RES 2 ms +/- 0.5 ms discrete input(s) VIA 2 ms +/- 0.5 ms analog input(s) VIB 2 ms +/- 0.5 ms analog input(s)
Response time	FLA, FLC 7 ms +/- 0.5 ms discrete output(s) FLB, FLC 7 ms +/- 0.5 ms discrete output(s) FM 2 ms +/- 0.5 ms analog output(s) RY, RC 7 ms +/- 0.5 ms discrete output(s)
Accuracy	FM +/- 1 % for a temperature variation 60 °C VIA +/- 0.6 % for a temperature variation 60 °C VIB +/- 0.6 % for a temperature variation 60 °C
Linearity error	FM +/- 0.2 % output VIA +/- 0.15 % of maximum value input VIB +/- 0.15 % of maximum value input
Analogue output number	1
Analogue output type	FM switch-configurable current 0...20 mA, impedance 500 Ohm, resolution 10 bits FM switch-configurable voltage 0...10 V DC, impedance 470 Ohm, resolution 10 bits
Discrete output number	2
Discrete output type	FLA, FLC configurable relay logic NO, electrical service life 100000 cycles FLB, FLC configurable relay logic NC, electrical service life 100000 cycles RY, RC configurable relay logic NO, electrical service life 100000 cycles
Minimum switching current	Configurable relay logic 3 mA at 24 V DC
Maximum switching current	FL, R on inductive load, 2 A at 250 V AC, cos phi = 0.4, L/R = 7 ms FL, R on inductive load, 2 A at 30 V DC, cos phi = 0.4, L/R = 7 ms FL, R on resistive load, 5 A at 250 V AC, cos phi = 1, L/R = 0 ms FL, R on resistive load, 5 A at 30 V DC, cos phi = 1, L/R = 0 ms
Discrete input type	F programmable 24 V DC, with level 1 PLC, impedance 3500 Ohm R programmable 24 V DC, with level 1 PLC, impedance 3500 Ohm RES programmable 24 V DC, with level 1 PLC, impedance 3500 Ohm
Discrete input logic	F, R, RES negative logic (sink), >= 16 V (state 0), <= 10 V (state 1) F, R, RES positive logic (source), <= 5 V (state 0), >= 11 V (state 1)
Acceleration and deceleration ramps	Automatic based on the load Linear adjustable separately from 0.01 to 3200 s
Braking to standstill	By DC injection
Protection type	Drive against input phase loss Drive break on the control circuit Drive input phase breaks Drive line supply overvoltage and undervoltage Drive line supply undervoltage Drive overcurrent between output phases and earth Drive overheating protection Drive overvoltages on the DC bus Drive pard Drive short-circuit between motor phases Drive thermal power stage

	Motor motor phase break Motor thermal protection Motor with PTC probes
Insulation resistance	>= 1 MOhm at 500 V DC for 1 minute
Frequency resolution	Analog input 0.024/50 Hz Display unit 0.1 Hz
Connector type	1 RJ45
Physical interface	2-wire RS 485
Transmission frame	RTU
Transmission rate	9600 bps or 19200 bps
Data format	8 bits, 1 stop, odd even or no configurable parity
Number of addresses	1...247
Communication service	Monitoring inhibitable Read device identification (43) Read holding registers (03) 2 words maximum Time out setting from 0.1 to 100 s Write multiple registers (16) 2 words maximum Write single register (06)
Marking	CE
Operating position	Vertical +/- 10 degree
Height	5.63 in (143 mm)
Width	4.21 in (107 mm)
Depth	5.91 in (150 mm)
Product weight	3.97 lb(US) (1.8 kg)

Environment

noise level	51 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	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 3 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 1.2/50 µs - 8/20 µs surge immunity test conforming to IEC 61000-4-5 level 3
standards	EN 61800-3 EN 61800-3 environments 1 category C1 EN 61800-3 environments 1 category C2 EN 61800-3 environments 1 category C3 EN 61800-3 environments 2 category C1 EN 61800-3 environments 2 category C2 EN 61800-3 environments 2 category C3 EN 61800-5-1 IEC 61800-3 IEC 61800-3 environments 1 category C1 IEC 61800-3 environments 1 category C2 IEC 61800-3 environments 1 category C3 IEC 61800-3 environments 2 category C1 IEC 61800-3 environments 2 category C2 IEC 61800-3 environments 2 category C3 IEC 61800-5-1 UL Type 1
product certifications	CSA C-Tick NOM 117 UL
vibration resistance	1.5 mm (f = 3...13 Hz) conforming to EN/IEC 60068-2-6 1 gn (f = 13...200 Hz) conforming to EN/IEC 60068-2-8
shock resistance	15 gn 11 ms conforming to IEC 60068-2-27
pollution degree	2 conforming to IEC 61800-5-1
environmental characteristic	Classes 3C1 conforming to IEC 60721-3-3 Classes 3S2 conforming to IEC 60721-3-3
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...104 °F (-10...40 °C) without derating 40...50 °C with derating

ambient air temperature for storage	-13...158 °F (-25...70 °C)
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Contractual warranty

Warranty period	18 months
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