

# Product data sheet

Specifications



## variable speed drive - ATV21 - 4kW 5HP - 240V - IP20

ATV21HU40M3X

⚠ Discontinued on: Dec 31, 2012

⚠ End-of-service on: Dec 31, 2020

⚠ Discontinued

### 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
power supply voltage	200...240 V - 15...10 %
Phase	3 phase
Motor power kW	4 kW
Maximum Horse Power Rating	5 hp
Line current	13 A 240 V 15.7 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 Energy saving ratio Quadratic voltage/frequency ratio Current flux vector control (FVC) without speed feedback 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 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
Option card	Communication card APOGEE FLN Communication card BACnet Communication card LonWorks Communication card METASYS N2

### Complementary

power supply voltage limits	170...264 V
power supply frequency	50...60 Hz - 5...5 %
power supply frequency limits	47.5...63 Hz

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

<b>Apparent power</b>	6.7 kVA 240 V
<b>maximum prospective line I<sub>sc</sub></b>	5 kA
<b>maximum continuous output current</b>	17.5 A 230 V
<b>Maximum transient current</b>	19.3 A 60 s
<b>Speed drive output frequency</b>	0.5...200 Hz
<b>Nominal switching frequency</b>	12 kHz
<b>Switching frequency</b>	12...16 kHz with derating factor 6...16 kHz adjustable
<b>Speed accuracy</b>	+/- 10 % of nominal slip 0.2 T <sub>n</sub> to T <sub>n</sub>
<b>Torque accuracy</b>	+/- 15 %
<b>Regulation loop</b>	Adjustable PI regulator
<b>Motor slip compensation</b>	Automatic whatever the load Adjustable Not available in voltage/frequency ratio motor control
<b>diagnostic</b>	for DC bus energized 1 LED (red)
<b>Output voltage</b>	<= power supply voltage
<b>Insulation</b>	Electrical between power and control
<b>recommended type of cable for mounting in an enclosure</b>	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
<b>Electrical connection</b>	L1/R, L2/S, L3/T terminal 0.009 in <sup>2</sup> (6 mm <sup>2</sup> ) / AWG 10 VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES terminal 0.004 in <sup>2</sup> (2.5 mm <sup>2</sup> ) / AWG 14
<b>Tightening torque</b>	11.5 lbf.in (1.3 N.m), 11.5 lb.in L1/R, L2/S, L3/T) 5.3 lbf.in (0.6 N.m) VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES)
<b>Supply</b>	Internal supply 24 V DC 21...27 V), <200 mA overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 %, <10 mA overload and short-circuit protection
<b>Analogue input number</b>	2
<b>Analogue input type</b>	VIA switch-configurable current 0...20 mA 242 Ohm 11 bits VIA switch-configurable voltage 0...10 V DC 24 V max 30000 Ohm 11 bits VIB configurable PTC probe 0...6 probes 1500 Ohm VIB configurable voltage 0...10 V DC 24 V max 30000 Ohm 11 bits
<b>Sampling duration</b>	F 2 ms +/- 0.5 ms discrete R 2 ms +/- 0.5 ms discrete RES 2 ms +/- 0.5 ms discrete VIA 2 ms +/- 0.5 ms analog VIB 2 ms +/- 0.5 ms analog
<b>Response time</b>	FLA, FLC 7 ms +/- 0.5 ms discrete FLB, FLC 7 ms +/- 0.5 ms discrete FM 2 ms +/- 0.5 ms analog RY, RC 7 ms +/- 0.5 ms discrete
<b>Accuracy</b>	+/- 1 % FM) for a temperature variation 60 °C +/- 0.6 % VIA) for a temperature variation 60 °C +/- 0.6 % VIB) for a temperature variation 60 °C
<b>Linearity error</b>	FM +/- 0.2 % output VIA +/- 0.15 % of maximum value input VIB +/- 0.15 % of maximum value input
<b>Analogue output number</b>	1
<b>Analogue output type</b>	FM switch-configurable current 0...20 mA 500 Ohm 10 bits FM switch-configurable voltage 0...10 V DC 470 Ohm 10 bits
<b>Discrete output number</b>	2

<b>Discrete output type</b>	Configurable relay logic FLA, FLC) NO - 100000 cycles Configurable relay logic FLB, FLC) NC - 100000 cycles Configurable relay logic RY, RC) NO - 100000 cycles
<b>Minimum switching current</b>	3 mA 24 V DC configurable relay logic
<b>Maximum switching current</b>	2 A 250 V AC inductive cos phi = 0.4 L/R = 7 ms FL, R) 2 A 30 V DC inductive cos phi = 0.4 L/R = 7 ms FL, R) 5 A 250 V AC resistive cos phi = 1 L/R = 0 ms FL, R) 5 A 30 V DC resistive cos phi = 1 L/R = 0 ms FL, R)
<b>Discrete input type</b>	F programmable 24 V DC level 1 PLC 3500 Ohm R programmable 24 V DC level 1 PLC 3500 Ohm RES programmable 24 V DC level 1 PLC 3500 Ohm
<b>Discrete input logic</b>	Negative logic (sink) F, R, RES), >= 16 V, <= 10 V Positive logic (source) F, R, RES), <= 5 V, >= 11 V
<b>Acceleration and deceleration ramps</b>	Automatic based on the load Linear adjustable separately from 0.01 to 3200 s
<b>Braking to standstill</b>	By DC injection
<b>Protection type</b>	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 Short-circuit between motor phases drive Thermal power stage drive Motor phase break motor Thermal protection motor With PTC probes motor Against exceeding limit speed drive
<b>Insulation resistance</b>	>= 1 mOhm 500 V DC for 1 minute
<b>Frequency resolution</b>	Analog input 0.024/50 Hz Display unit 0.1 Hz
<b>Connector Type</b>	1 RJ45
<b>Physical interface</b>	2-wire RS 485
<b>Transmission frame</b>	RTU
<b>Transmission Rate</b>	9600 bps or 19200 bps
<b>Data format</b>	8 bits, 1 stop, odd even or no configurable parity
<b>Number of addresses</b>	1...247
<b>Communication Service</b>	Read device identification (43) Time out setting from 0.1 to 100 s Write single register (06) Write multiple registers (16) 2 words maximum Monitoring inhabitable Read holding registers (03) 2 words maximum
<b>Marking</b>	CE
<b>Operating position</b>	Vertical +/- 10 degree
<b>Height</b>	7.2 in (184 mm)
<b>Width</b>	5.6 in (142 mm)
<b>Depth</b>	1.9 in (48 mm)
<b>Product Weight</b>	6.72 lb(US) (3.05 kg)

## Environment

<b>Noise level</b>	51 dB 86/188/EEC
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<b>Dielectric strength</b>	2830 V DC between earth and power terminals 4230 V DC between control and power terminals
<b>Electromagnetic compatibility</b>	1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5 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
<b>Standards</b>	IEC 61800-3 environments 2 category C3 IEC 61800-3 environments 1 category C2 EN 61800-3 environments 2 category C3 EN 61800-3 environments 1 category C2 EN 61800-3 environments 1 category C3 EN 61800-3 environments 2 category C2 IEC 61800-3 environments 1 category C3 IEC 61800-3 EN 61800-3 environments 2 category C1 IEC 61800-5-1 EN 61800-3 IEC 61800-3 environments 1 category C1 IEC 61800-3 environments 2 category C1 IEC 61800-3 environments 2 category C2 EN 61800-3 environments 1 category C1 EN 61800-5-1 UL Type 1
<b>Product Certifications</b>	UL NOM 117 C-tick CSA
<b>Vibration resistance</b>	1 gn 13...200 Hz)EN/IEC 60068-2-8 1.5 mm 3...13 Hz)EN/IEC 60068-2-6
<b>Shock resistance</b>	15 gn 11 ms IEC 60068-2-27
<b>Pollution degree</b>	3 IEC 61800-5-1
<b>Environmental characteristic</b>	Classes 3C1 IEC 60721-3-3 Classes 3S2 IEC 60721-3-3
<b>Relative humidity</b>	5...95 % without condensation IEC 60068-2-3 5...95 % without dripping water IEC 60068-2-3
<b>Ambient air temperature for operation</b>	14...104 °F (-10...40 °C) without derating) 104...122 °F (40...50 °C) with derating factor)
<b>Ambient Air Temperature for Storage</b>	-13...158 °F (-25...70 °C)
<b>Operating altitude</b>	<= 6561.68 ft (2000 m) 3280.84...9842.52 ft (1000...3000 m) limited to 2000 m for the Corner Grounded distribution network

## Ordering and shipping details

<b>Category</b>	22155-ATV212 1 - 25 HP 230 VOLT
<b>Discount Schedule</b>	CP4D
<b>GTIN</b>	00785901503460
<b>Returnability</b>	No
<b>Country of origin</b>	ID

## Contractual warranty

<b>Warranty</b>	18 months
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