

# Product datasheet

Specifications



## variable speed drive ATV212 - IP54 - 22 kW 3x380 480 V

TSI Code: 400939043    ATV212WD22N4CZH28

! To be discontinued on: 31 March 2022

! To be end-of-service on: 31 March 2022

! To be discontinued

### Main

Device short name	ATV212
Product destination	Asynchronous motors
Network number of phases	3 phases
Motor power kW	22 kW
Motor power hp	30 hp
Supply voltage limits	323...528 V
Supply frequency	50...60 Hz - 5...5 %
Line current	33.1 A at 480 V 41.1 A at 380 V
Range of product	Altivar 212
Product or component type	Variable speed drive
Product specific application	Pumps and fans in HVAC
Communication port protocol	LonWorks Modbus APOGEE FLN METASYS N2 BACnet
[Us] rated supply voltage	380...480 V - 15...10 %
EMC filter	Class C1 EMC filter integrated

### Complementary

Apparent power	33.2 kVA at 380 V
Continuous output current	43.5 A at 380 V 43.5 A at 460 V
Maximum transient current	47.9 A for 60 s
Speed drive output frequency	0.5...200 Hz
Speed range	1...10
Speed accuracy	+/- 10 % of nominal slip 0.2 Tn to Tn
Local signalling	1 LED (red) for DC bus energized
Output voltage	<= power supply voltage
Isolation	Electrical between power and control

<b>Type of cable</b>	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 UL Type 1 kit: 3 wire(s)UL 508 cable at 40 °C, copper 75 °C / PVC
<b>Electrical connection</b>	VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES: terminal 2.5 mm <sup>2</sup> / AWG 14 L1/R, L2/S, L3/T: terminal 25 mm <sup>2</sup> / AWG 3 U/T1, V/T2, W/T3: terminal 50 mm <sup>2</sup> / AWG 1/0
<b>Tightening torque</b>	0.6 N.m (VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES) 4.3 N.m, 38 lb.in (L1/R, L2/S, L3/T) 24 N.m, 212 lb.in (U/T1, V/T2, W/T3)
<b>Supply</b>	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
<b>Sampling duration</b>	2 ms +/- 0.5 ms F discrete 2 ms +/- 0.5 ms R discrete 2 ms +/- 0.5 ms RES discrete 3.5 ms +/- 0.5 ms VIA analog 22 ms +/- 0.5 ms VIB analog
<b>Response time</b>	FM 2 ms, tolerance +/- 0.5 ms for analog output(s) FLA, FLC 7 ms, tolerance +/- 0.5 ms for discrete output(s) FLB, FLC 7 ms, tolerance +/- 0.5 ms for discrete output(s) RY, RC 7 ms, tolerance +/- 0.5 ms for discrete output(s)
<b>Accuracy</b>	+/- 0.6 % (VIA) for a temperature variation 60 °C +/- 0.6 % (VIB) for a temperature variation 60 °C +/- 1 % (FM) for a temperature variation 60 °C
<b>Linearity error</b>	VIA: +/- 0.15 % of maximum value for input VIB: +/- 0.15 % of maximum value for input FM: +/- 0.2 % for output
<b>Analogue output type</b>	FM switch-configurable voltage 0...10 V DC, impedance: 7620 Ohm, resolution 10 bits FM switch-configurable current 0...20 mA, impedance: 970 Ohm, resolution 10 bits
<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 at 24 V DC for configurable relay logic
<b>Maximum switching current</b>	5 A at 250 V AC on resistive load - cos phi = 1 - L/R = 0 ms (FL, R) 5 A at 30 V DC on resistive load - cos phi = 1 - L/R = 0 ms (FL, R) 2 A at 250 V AC on inductive load - cos phi = 0.4 - L/R = 7 ms (FL, R) 2 A at 30 V DC on inductive load - cos phi = 0.4 - L/R = 7 ms (FL, R)
<b>Discrete input type</b>	F programmable 24 V DC, with level 1 PLC, impedance: 4700 Ohm R programmable 24 V DC, with level 1 PLC, impedance: 4700 Ohm RES programmable 24 V DC, with level 1 PLC, impedance: 4700 Ohm
<b>Discrete input logic</b>	Positive logic (source) (F, R, RES), <= 5 V (state 0), >= 11 V (state 1) Negative logic (sink) (F, R, RES), >= 16 V (state 0), <= 10 V (state 1)
<b>Dielectric strength</b>	3535 V DC between earth and power terminals 5092 V DC between control and power terminals
<b>Insulation resistance</b>	>= 1 mOhm 500 V DC for 1 minute
<b>Frequency resolution</b>	Display unit: 0.1 Hz Analog input: 0.024/50 Hz
<b>Communication service</b>	Monitoring inhibitible Time out setting from 0.1 to 100 s Write single register (06) Read device identification (43) Read holding registers (03) 2 words maximum Write multiple registers (16) 2 words maximum
<b>Option card</b>	Communication card for LonWorks
<b>Discrete output number</b>	2
<b>Analogue input number</b>	2
<b>Analogue input type</b>	VIA switch-configurable voltage: 0...10 V DC 24 V max, impedance: 30000 Ohm, resolution 10 bits VIB configurable voltage: 0...10 V DC 24 V max, impedance: 30000 Ohm, resolution 10 bits VIB configurable PTC probe: 0...6 probes, impedance: 1500 Ohm VIA switch-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 10 bits
<b>Analogue output number</b>	1
<b>Physical interface</b>	2-wire RS 485
<b>Connector type</b>	1 open style 1 RJ45

<b>Transmission rate</b>	9600 bps or 19200 bps
<b>Transmission frame</b>	RTU
<b>Number of addresses</b>	1...247
<b>Data format</b>	8 bits, 1 stop, odd even or no configurable parity
<b>Type of polarization</b>	No impedance
<b>Asynchronous motor control profile</b>	Voltage/frequency ratio - Energy Saving, quadratic U/f Voltage/frequency ratio, automatic IR compensation (U/f + automatic U <sub>0</sub> ) Voltage/frequency ratio, 5 points Voltage/frequency ratio, 2 points Flux vector control without sensor, standard
<b>Torque accuracy</b>	+/- 15 %
<b>Transient overtorque</b>	120 % of nominal motor torque +/- 10 % for 60 s
<b>Acceleration and deceleration ramps</b>	Automatic based on the load Linear adjustable separately from 0.01 to 3200 s
<b>Motor slip compensation</b>	Automatic whatever the load Not available in voltage/frequency ratio motor control Adjustable
<b>Switching frequency</b>	6...16 kHz adjustable 8...16 kHz with derating factor
<b>Nominal switching frequency</b>	8 kHz
<b>Braking to standstill</b>	By DC injection
<b>Network frequency</b>	47.5...63 Hz
<b>Prospective line I<sub>sc</sub></b>	22 kA
<b>Protection type</b>	Overheating protection: drive Thermal power stage: 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 overvoltage and undervoltage: drive Line supply undervoltage: drive Against input phase loss: drive Thermal protection: motor Motor phase break: motor With PTC probes: motor
<b>Width</b>	284 mm
<b>Height</b>	720 mm
<b>Depth</b>	315 mm
<b>Product weight</b>	58.5 kg
<b>Environment</b>	
<b>Pollution degree</b>	3 conforming to IEC 61800-5-1
<b>IP degree of protection</b>	IP54 conforming to EN/IEC 61800-5-1 IP54 conforming to EN/IEC 60529
<b>Vibration resistance</b>	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
<b>Shock resistance</b>	15 gn for 11 ms conforming to IEC 60068-2-27
<b>Environmental characteristic</b>	Classes 3C1 conforming to IEC 60721-3-3 Classes 3S2 conforming to IEC 60721-3-3
<b>Noise level</b>	59.9 dB conforming to 86/188/EEC
<b>Operating altitude</b>	1000...3000 m limited to 2000 m for the Corner Grounded distribution network with current derating 1 % per 100 m <= 1000 m without derating
<b>Relative humidity</b>	5...95 % without condensation conforming to IEC 60068-2-3 5...95 % without dripping water conforming to IEC 60068-2-3

<b>Ambient air temperature for operation</b>	-10...40 °C (without derating) 40...50 °C (with derating factor)
<b>Operating position</b>	Vertical +/- 10 degree
<b>Product certifications</b>	C-Tick UL NOM 117 CSA
<b>Marking</b>	CE
<b>Standards</b>	IEC 61800-3 EN 61800-3 environments 1 category C2 IEC 61800-3 environments 1 category C3 EN 61800-3 IEC 61800-3 category C1 IEC 61800-5-1 IEC 61800-3 environments 2 category C3 EN 61800-3 environments 1 category C3 EN 61800-3 environments 1 category C1 IEC 61800-3 environments 2 category C2 IEC 61800-3 environments 2 category C1 IEC 61800-3 environments 1 category C1 EN 61800-3 environments 2 category C3 EN 61800-3 category C1 IEC 61800-3 environments 1 category C2 EN 61800-5-1 EN 61800-3 environments 2 category C2 EN 55011 group 1 class B EN 61800-3 environments 2 category C1
<b>Assembly style</b>	With heat sink
<b>Electromagnetic compatibility</b>	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 µs - 8/20 µs 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
<b>Regulation loop</b>	Adjustable PI regulator
<b>Ambient air temperature for storage</b>	-25...70 °C

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Weight</b>	58.5 kg
<b>Package 1 Height</b>	72 cm
<b>Package 1 width</b>	28.4 cm
<b>Package 1 Length</b>	31.5 cm

## Contractual warranty

<b>Warranty</b>	18 months
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