

# Product datasheet

Specifications



## Variable speed drive, Altivar Process ATV900, APM, single 400 V, 200 kW

ATV9A0C20Q4

### Main

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| <b>Range of product</b>                    | Altivar Process ATV900   |
| <b>Product specific application</b>        | Process and utilities  |
| <b>Product or component type</b>           | Variable speed drive   |
| <b>Device short name</b>                   | ATV9A0   |
| <b>Variant</b>                             | Modular version  |
| <b>Product destination</b>                 | Synchronous motors<br>Asynchronous motors  |
| <b>Mounting mode</b>                       | Cabinet mount  |
| <b>Kit composition</b>                     | 1 control unit<br>mechanical mounting kits<br>power connection<br>set of fuses<br>2.0 power module 160 kW<br>1 front cover                     |
| <b>EMC filter</b>                          | Integrated with 300 m conforming to IEC 61800-3 category C3  |
| <b>IP degree of protection</b>             | IP00 (for IP21 or IP54 cabinet integration) conforming to IEC 61800-5-1<br>IP00 (for IP21 or IP54 cabinet integration) conforming to IEC 60529 |
| <b>Type of cooling</b>                     | Forced convection  |
| <b>Supply frequency</b>                    | 50...60 Hz +/- 5 %   |
| <b>Network number of phases</b>            | 3 phases   |
| <b>[Us] rated supply voltage</b>           | 400 V - 15...10 %  |
| <b>Prospective line Isc</b>                | 50 kA  |
| <b>Permissible temporary current boost</b> | 1.2 x In during 60 s (normal duty)<br>1.5 x In during 60 s (heavy duty)  |
| <b>Asynchronous motor control profile</b>  | Optimized torque mode<br>Variable torque standard<br>Constant torque standard  |
| <b>Synchronous motor control profile</b>   | Permanent magnet motor<br>Synchronous reluctance motor   |
| <b>Speed drive output frequency</b>        | 0.1...599 Hz   |
| <b>Nominal switching frequency</b>         | 2.5 kHz  |
| <b>Switching frequency</b>                 | 2.5...8 kHz with derating factor<br>2...8 kHz adjustable   |
| <b>Safety function</b>                     | STO (safe torque off) SIL 3  |
| <b>Communication port protocol</b>         | EtherNet/IP<br>Modbus serial<br>Modbus TCP   |

Excluding VAT and subject to change. Please check with your local distributor through "Where to buy"

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| <b>Option card</b> | Slot A: communication module for Profibus DP V1<br>Slot A: communication module for PROFINET<br>Slot A: communication module for DeviceNet<br>Slot A: communication module for EtherCAT<br>Slot A: communication module for CANopen daisy chain RJ45<br>Slot A: communication module for CANopen SUB-D 9<br>Slot A: communication module for CANopen screw terminals<br>Slot A/slot B/slot C: digital and analog I/O extension module<br>Slot A/slot B/slot C: output relay extension module<br>Slot B: 5/12 V digital encoder interface module<br>Slot B: analog encoder interface module<br>Slot B: resolver encoder interface module |
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## Complementary

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| <b>Motor power kW</b>                      | 200.0 kW at 400 V normal duty<br>160.0 kW at 400 V heavy duty  |
| <b>Line current</b>                        | 352.0 A at 400 V (normal duty)<br>290.0 A at 400 V (heavy duty)  |
| <b>Apparent power</b>                      | 244.0 kVA at 400 V normal duty<br>201.0 kVA at 400 V heavy duty  |
| <b>Continuous output current</b>           | 370.0 A at 2.5 kHz normal duty<br>302.0 A at 2.5 kHz heavy duty  |
| <b>Maximum transient current</b>           | 444.0 A during 60 s (normal duty)<br>453.0 A during 60 s (heavy duty)  |
| <b>Motor slip compensation</b>             | Adjustable<br>Automatic whatever the load<br>Not available in permanent magnet motor law<br>Can be suppressed  |
| <b>Acceleration and deceleration ramps</b> | Linear adjustable separately from 0.01...9999 s  |
| <b>Protection type</b>                     | Thermal protection: motor<br>Safe torque off: motor<br>Motor phase break: motor<br>Thermal protection: drive<br>Safe torque off: drive<br>Overheating: drive<br>Overcurrent between output phases and earth: drive<br>Overload of output voltage: drive<br>Short-circuit protection: drive<br>Motor phase break: drive<br>Overvoltages on the DC bus: drive<br>Line supply overvoltage: drive<br>Line supply undervoltage: drive<br>Line supply phase loss: drive<br>Overspeed: drive<br>Break on the control circuit: drive |
| <b>Frequency resolution</b>                | Display unit: 0.1 Hz<br>Analog input: 0.012/50 Hz  |
| <b>Electrical connection</b>               | Control: removable screw terminals 0.5...1.5 mm <sup>2</sup> /AWG 20...AWG 16<br>Line side: screw terminal<br>Motor: M10 x 2 bars  |
| <b>Connector type</b>                      | 2 RJ45 for Ethernet IP/Modbus TCP on the control block<br>1 RJ45 for Modbus serial on the control block  |
| <b>Physical interface</b>                  | 2-wire RS 485 for Modbus serial  |
| <b>Transmission frame</b>                  | RTU for Modbus serial  |
| <b>Transmission rate</b>                   | 10/100 Mbit/s for Ethernet IP/Modbus TCP<br>4.8, 9.6, 19.2, 38.4 kbit/s for Modbus serial  |
| <b>Exchange mode</b>                       | Half duplex, full duplex, autonegotiation Ethernet IP/Modbus TCP   |
| <b>Data format</b>                         | 8 bits, configurable odd, even or no parity for Modbus serial  |
| <b>Type of polarization</b>                | No impedance for Modbus serial   |
| <b>Number of addresses</b>                 | 1...247 for Modbus serial  |

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| <b>Method of access</b>          | Slave Modbus TCP   |
| <b>Supply</b>                    | External supply for digital inputs: 24 V DC (19...30 V), <1.25 mA, protection type: overload and short-circuit protection<br>Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection<br>Internal supply for digital inputs and STO: 24 V DC (21...27 V), <200 mA, protection type: overload and short-circuit protection   |
| <b>Local signalling</b>          | Local diagnostic: 3 LED (mono/dual colour)<br>Embedded communication status: 5 LED (dual colour)<br>Communication module status: 2 LED (dual colour)   |
| <b>Analogue input type</b>       | AI1, AI3 software-configurable voltage: 0...10 V DC, impedance: 30 kOhm, resolution 12 bits<br>AI1, AI3 software-configurable current: 0...20 mA/4...20 mA, impedance: 250 Ohm, resolution 12 bits<br>AI2 software-configurable voltage: +/- 10 V DC, impedance: 30 kOhm, resolution 12 bits<br>AI2 software-configurable voltage: 0...10 V DC, impedance: 30 kOhm, resolution 12 bits   |
| <b>Discrete input type</b>       | DI1...DI8 programmable, 24 V DC (<= 30 V), impedance: 3.5 kOhm<br>DI7, DI8 programmable as pulse input: 0...30 kHz, 24 V DC (<= 30 V)<br>STOA, STOB safe torque off, 24 V DC (<= 30 V), impedance: > 2.2 kOhm  |
| <b>Input compatibility</b>       | DI1...DI8: discrete input level 1 PLC conforming to IEC 61131-2<br>DI7, DI8: pulse input level 1 PLC conforming to IEC 65A-68<br>STOA, STOB: discrete input level 1 PLC conforming to IEC 61131-2  |
| <b>Discrete input logic</b>      | Positive logic (source) (DI1...DI8), < 5 V (state 0), > 11 V (state 1)<br>Negative logic (sink) (DI1...DI8), > 16 V (state 0), < 10 V (state 1)<br>Positive logic (source) (DI7, DI8), < 0.6 V (state 0), > 2.5 V (state 1)<br>Positive logic (source) (STOA, STOB), < 5 V (state 0), > 11 V (state 1)   |
| <b>Analogue output type</b>      | Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits<br>Software-configurable current AQ1, AQ2: 0...20 mA impedance 500 Ohm, resolution 10 bits   |
| <b>Discrete output type</b>      | Logic output DQ+ 0...1 kHz <= 30 V DC 100 mA<br>Programmable as pulse output DQ+ 0...30 kHz <= 30 V DC 20 mA<br>Logic output DQ- 0...1 kHz <= 30 V DC 100 mA   |
| <b>Sampling duration</b>         | 2 ms +/- 0.5 ms (DI1...DI8) - discrete input<br>5 ms +/- 1 ms (DI7, DI8) - pulse input<br>1 ms +/- 1 ms (AI1, AI2, AI3) - analog input<br>5 ms +/- 1 ms (AQ1, AQ2) - analog output   |
| <b>Accuracy</b>                  | +/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input<br>+/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output   |
| <b>Linearity error</b>           | AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input<br>AQ1, AQ2: +/- 0.2 % for analog output   |
| <b>Relay output type</b>         | Configurable relay logic R1: fault relay NO/NC electrical durability 100000 cycles<br>Configurable relay logic R2: sequence relay NO electrical durability 1000000 cycles<br>Configurable relay logic R3: sequence relay NO electrical durability 1000000 cycles   |
| <b>Refresh time</b>              | Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)   |
| <b>Minimum switching current</b> | Relay output R1, R2, R3: 5 mA at 24 V DC   |
| <b>Maximum switching current</b> | Relay output R1 on resistive load, cos phi = 1: 3 A at 250 V AC<br>Relay output R1 on resistive load, cos phi = 1: 3 A at 30 V DC<br>Relay output R1 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC<br>Relay output R1 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC<br>Relay output R2, R3 on resistive load, cos phi = 1: 5 A at 250 V AC<br>Relay output R2, R3 on resistive load, cos phi = 1: 5 A at 30 V DC<br>Relay output R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC<br>Relay output R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC |
| <b>Insulation resistance</b>     | > 1 MOhm at 500 V DC, 1 min, earth   |

## Environment

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| <b>Noise level</b> | 70 dB conforming to 86/188/EEC |
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| <b>Maximum THDI</b>                          | <48 % from 80...100 % of load  |
| <b>Electromagnetic compatibility</b>         | Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3<br>Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4<br>1.2/50 $\mu$ s - 8/20 $\mu$ s surge immunity test level 3 conforming to IEC 61000-4-5<br>Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6 |
| <b>Pollution degree</b>                      | 2 conforming to IEC 61800-5-1  |
| <b>Vibration resistance</b>                  | 1.5 mm peak to peak (f= 2...13 Hz) conforming to IEC 60068-2-6<br>0.5 gn (f= 13...200 Hz) conforming to IEC 60068-2-6  |
| <b>Shock resistance</b>                      | 7 gn for 11 ms conforming to IEC 60068-2-27  |
| <b>Relative humidity</b>                     | 5...95 % without condensation conforming to IEC 60068-2-3  |
| <b>Ambient air temperature for operation</b> | -10...40 °C without derating<br>40...50 °C with derating factor  |
| <b>Ambient air temperature for storage</b>   | -40...70 °C  |
| <b>Operating altitude</b>                    | 0...4800 m with current derating above 1000m   |
| <b>Environmental characteristic</b>          | Chemical pollution resistance class 3C3 conforming to IEC 60721-3-3<br>Dust pollution resistance class 3S3 conforming to IEC 60721-3-3   |
| <b>Standards</b>                             | IEC 61800-3<br>IEC 61800-5-1<br>IEC 61000-3-12<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1  |
| <b>Product certifications</b>                | TÜV<br>UL<br>cUL   |
| <b>Marking</b>                               | CE   |

## Contractual warranty

|                             |    |
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| <b>Warranty (in months)</b> | 18 |
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## Environmental Data

Schneider Electric aims to achieve Net Zero status by 2050 through supply chain partnerships, lower impact materials, and circularity via our ongoing “Use Better, Use Longer, Use Again” campaign to extend product lifetimes and recyclability.

[Environmental Data explained >](#)

[How we assess product sustainability >](#)

### Use Longer



#### Lifetime extension

Repair

No