

### Main

Range of product	Altivar Process ATV900
Product or component type	Variable speed drive
Device application	Industrial application
Device short name	ATV9A0
Variant	Modular version
Product destination	Synchronous motors Asynchronous motors
Mounting mode	Cabinet mount
Kit composition	Mechanical mounting kits Power connection Set of fuses 1 control unit 5 power module 160 kW 4 front cover
EMC filter	Integrated conforming to EN/IEC 61800-3 category C3 with <= 300 m motor cable maxi
IP degree of protection	IP00 conforming to IEC 61800-5-1 for IP21 or IP54 cabinet integration IP00 conforming to IEC 60529 for IP21 or IP54 cabinet integration
Type of cooling	Forced convection
Supply frequency	50...60 Hz +/- 5 %
Network number of phases	3 phases
[Us] rated supply voltage	480 V - 15...10 %
Prospective line I <sub>sc</sub>	50 kA
Asynchronous motor control profile	Constant torque standard Optimized torque mode Variable torque standard
Synchronous motor control profile	Permanent magnet motor
Speed drive output frequency	0.1...599 Hz
Nominal switching frequency	2.5 kHz
Switching frequency	2...8 kHz adjustable 2.5...8 kHz with derating factor
Safety function	STO (safe torque off) SIL 3
Discrete input logic	16 preset speeds

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Communication port protocol	Modbus serial Ethernet/IP Modbus TCP
Option card	Slot A : communication module for Profibus DP V1 Slot A : communication module for Profinet Slot A : communication module for DeviceNet Slot A : communication module for CANopen daisy chain RJ45 Slot A : communication module for CANopen SUB-D 9 Slot A : communication module for CANopen screw terminals Slot A : communication module for EtherCAT Slot A/slot B/slot C : digital and analog I/O extension module Slot A/slot B/slot C : output relay extension module Slot B : analog encoder interface module Slot B : resolver encoder interface module Slot B : digital encoder interface module for 5/12 V

## Complementary

Motor slip compensation	Automatic whatever the load Not available in permanent magnet motor law Adjustable Can be suppressed
Acceleration and deceleration ramps	Linear adjustable separately from 0.01...9999 s
Braking to standstill	By DC injection
Protection type	Safe torque off motor Motor phase break motor Safe torque off drive Overheating drive Short-circuit protection drive Motor phase break drive Overspeed drive Break on the control circuit drive Overvoltages on the DC bus drive Overload of output voltage drive Line supply overvoltage drive Line supply phase loss drive Line supply undervoltage drive Overcurrent between output phases and earth drive Thermal protection motor Thermal protection drive
Frequency resolution	0.012/50 Hz analog input 0.1 Hz display unit
Electrical connection	Removable screw terminals 0.5...1.5 mm <sup>2</sup> AWG 20...AWG 16 control Screw terminal line side M10 x 2 bars motor
Connector type	2 RJ45 for Ethernet IP/Modbus TCP on the control block 1 RJ45 for Modbus serial on the control block
Physical interface	2-wire RS 485 for Modbus serial
Transmission frame	RTU for Modbus serial
Transmission rate	10/100 Mbit/s for Ethernet IP/Modbus TCP 4.8, 9.6, 19.2, 38.4 kbit/s for Modbus serial
Exchange mode	Half duplex, full duplex, autonegotiation for Ethernet IP/Modbus TCP
Data format	8 bits, configurable odd, even or no parity for Modbus serial
Type of polarization	No impedance for Modbus serial
Number of addresses	For Modbus serial
Method of access	Slave for Modbus TCP
Supply	External supply for digital inputs : 24 V DC 19...30 V ≤ 1.25 mA overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm) : 10.5 V D-C +/- 5 % ≤ 10 mA overload and short-circuit protection Internal supply for digital inputs and STO : 24 V DC 21...27 V ≤ 200 mA overload and short-circuit protection
Local signalling	LED 3 mono/dual colour local diagnostic LED 5 dual colour embedded communication status LED 2 dual colour communication module status
Analogue input number	3
Analogue input type	Software-configurable voltage AI1, AI2, AI3 0...10 V DC 30 kOhm 12 bits Software-configurable current AI1, AI2, AI3 0...20 mA/4...20 mA 250 Ohm 12 bits
Discrete input number	10

Discrete input type	Safe torque off STOA, STOB 24 V DC $\leq$ 30 V > 2.2 kOhm Programmable DI1...DI8 24 V DC $\leq$ 30 V 3.5 kOhm Programmable as pulse input DI7, DI8 0...30 kHz 24 V DC $\leq$ 30 V
Input compatibility	Level 1 PLC EN/IEC 61131-2 STOA, STOB discrete input Level 1 PLC EN/IEC 61131-2 DI1...DI8 discrete input Level 1 PLC IEC 65A-68 DI7, DI8 pulse input
Discrete input logic	Positive logic (source) STOA, STOB < 5 V > 11 V Positive logic (source) DI1...DI8 < 5 V > 11 V Negative logic (sink) DI1...DI8 > 16 V < 10 V Positive logic (source) DI7, DI8 < 0.6 V > 2.5 V
Analogue output number	2
Analogue output type	Software-configurable voltage AQ1, AQ2 0...10 V DC 470 Ohm 10 bits Software-configurable current AQ1, AQ2 0...20 mA 500 Ohm 10 bits
Discrete output number	2
Discrete output type	Logic output DQ+ 0...1 kHz $\leq$ 30 V DC 100 mA Programmable as pulse output DQ+ 0...30 kHz $\leq$ 30 V DC 20 mA Logic output DQ- 0...1 kHz $\leq$ 30 V DC 100 mA
Sampling duration	2 ms +/- 0.5 ms DI1...DI8 discrete input 5 ms +/- 1 ms DI7, DI8 pulse input 1 ms +/- 1 ms AI1, AI2, AI3 analog input 5 ms +/- 1 ms AQ1, AQ2 analog output
Accuracy	+/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input +/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output
Linearity error	+/- 0.15 % of maximum value analog input AI1, AI2, AI3 +/- 0.2 % analog output AQ1, AQ2
Relay output number	3
Relay output type	Configurable relay logic R1 fault relay NO/NC 100000 cycles Configurable relay logic R2 sequence relay NO 1000000 cycles Configurable relay logic R3 sequence relay NO 1000000 cycles
Refresh time	5 ms +/- 0.5 ms R1, R2, R3 relay output
Minimum switching current	5 mA 24 V DC R1, R2, R3 relay output
Maximum switching current	3 A 250 V AC resistive 1 R1 relay output 3 A 30 V DC resistive 1 R1 relay output 2 A 250 V AC inductive 0.4 7 ms R1 relay output 2 A 30 V DC inductive 0.4 7 ms R1 relay output 5 A 250 V AC resistive 1 R2, R3 relay output 5 A 30 V DC resistive 1 R2, R3 relay output 2 A 250 V AC inductive 0.4 7 ms R2, R3 relay output 2 A 30 V DC inductive 0.4 7 ms R2, R3 relay output
Isolation	Between power and control terminals
Number of power modules	5

## Environment

Noise level	74 dB 86/188/EEC
Power dissipation in W	15700 W forced convection 2.5 kHz
THDI	$\leq$ 48 % full load conforming to IEC 61000-3-12
Electromagnetic compatibility	1.2/50 $\mu$ s - 8/20 $\mu$ s surge immunity test level 3 conforming to IEC 61000-4-5 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 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 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6
Pollution degree	2 EN/IEC 61800-5-1
Vibration resistance	1.5 mm peak to peak 2...13 Hz IEC 60068-2-6 0.5 gn 13...200 Hz IEC 60068-2-6
Shock resistance	7 gn 11 ms IEC 60068-2-27
Relative humidity	5...95 % without condensation conforming to IEC 60068-2-3
Ambient air temperature for operation	40...50 °C with derating factor -10...40 °C without derating
Ambient air temperature for storage	-40...70 °C
Operating altitude	1000...4800 m with current derating 1 % per 100 m $\leq$ 1000 m without derating
Environmental characteristic	Chemical pollution resistance class 3C3 EN/IEC 60721-3-3 Dust pollution resistance class 3S3 EN/IEC 60721-3-3

Standards	EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1
Product certifications	TÜV REACH
Marking	CE

Product Life Status : **Commercialised**