Product data sheet
Characteristics

ATV6A0C40Q4
Altivar Process Modular single drive - ATV600 - 400 V - 400 Kw

Main

Range of product	Altivar Process ATV600
Product or component type	Variable speed drive
Product specific application	Process and utilities
Device short name	ATV6A0
Variant	Modular version
Product destination	Asynchronous motors Synchronous motors
Mounting mode	Cabinet mount
Kit composition	Mechanical mounting kits Power connection Set of fuses 1 control unit 3 power module 160 kW 2 front cover
EMC filter	Integrated conforming to EN/IEC 61800-3 category C3 with 300 m
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...5 %
Network number of phases	3 phases
[Us] rated supply voltage	400 V - 15...10 %
Motor power kW	400 kW at 400 V (normal duty) 315 kW at 400 V (heavy duty)
Line current	681 A at 400 V (normal duty) 545 A at 400 V (heavy duty)
Prospective line Isc	50 kA
Apparent power	472 kVA at 400 V (normal duty) 378 kVA at 400 V (heavy duty)
Continuous output current	730 A at 2.5 kHz (normal duty) 590 A at 2.5 kHz (heavy duty)
Maximum transient current	803 A during 60 s (normal duty) 885 A during 60 s (heavy duty)
Asynchronous motor control profile	Constant torque standard Variable torque standard Optimized torque mode
Synchronous motor control profile	Permanent magnet motor

Speed drive output frequency	0.1...500 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
Number of preset speeds	16 preset speeds
Communication port protocol	Ethernet Modbus serial Modbus TCP
Option module	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 Modbus TCP/EtherNet/IP 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/slot B : digital and analog I/O extension module Slot A/slot B : output relay extension module

Complementary

Output voltage	<= power supply voltage
Permissible temporary current boost	1.1 x In[Sapce]during 60 s (normal duty) 1.5 x In[Sapce]during 60 s (heavy duty)
Motor slip compensation	Adjustable Automatic whatever the load Can be suppressed Not available in permanent magnet motor law
Acceleration and deceleration ramps	S, U or customized 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 mm² AWG 20...AWG 16 control Screw terminal line side M10 x 2 bars motor
Connector type	RJ45 for Ethernet/Modbus TCP on the remote graphic terminal RJ45 for Modbus serial on the remote graphic terminal
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/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	1...247 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 DC +/- 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	3 LEDs for local diagnostic 3 LEDs dual colour for embedded communication status 4 LEDs dual colour for 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	8
Discrete input type	Programmable DI1...DI6 24 V DC <= 30 V 3.5 kOhm Programmable as pulse input DI5, DI6 0...30 kHz 24 V DC <= 30 V Safe torque off STOA, STOB 24 V DC <= 30 V > 2.2 kOhm
Input compatibility	Discrete input DI1...DI6 : level 1 PLC conforming to EN/IEC 61131-2 Discrete input DI5, DI6 : level 1 PLC conforming to IEC 65A-68 Discrete input STOA, STOB : level 1 PLC conforming to EN/IEC 61131-2
Discrete input logic	DI1...DI6, positive logic (source) : < 5 V (state 0) > 11 V DI1...DI6, negative logic (sink) : > 16 V (state 0) < 10 V DI5, DI6, positive logic (source) : < 0.6 V (state 0) > 2.5 V STOA, STOB, positive logic (source) : < 5 V (state 0) > 11 V
Analogue output number	2
Analogue output type	Software-configurable current AO1, AO2 : 0...20 mA, resolution 10 bits Software-configurable voltage AO1, AO2 : 0...10 V DC impedance 470 Ohm, resolution 10 bits
Sampling duration	Discrete input DI1...DI4 : 2 ms (+/- 0.5 ms) Discrete input DI5, DI6 : 5 ms (+/- 1 ms) Analog input AI1, AI2, AI3 : 5 ms (+/- 0.1 ms) Analog output AO1 : 10 ms (+/- 1 ms)
Accuracy	Analog input AI1, AI2, AI3 : +/- 0.6 % for a temperature variation 60 °C Analog output AO1, AO2 : +/- 1 % for a temperature variation 60 °C
Relay output number	3
Linearity error	Analog input AI1, AI2, AI3 : +/- 0.15 % of maximum value Analog output AO1, AO2 : +/- 0.2 %
Relay output type	Configurable relay logic R1 : fault relay NO/NC electrical durability 100000 cycles Configurable relay logic R2 : sequence relay NO electrical durability 100000 cycles Configurable relay logic R3 : sequence relay NO electrical durability 100000 cycles
Refresh time	Relay output R1, R2, R3 : 5 ms (+/- 0.5 ms)
Maximum switching current	3 A 250 V AC resistive 1 R1, R2, R3 relay output 3 A 30 V DC resistive 1 R1, R2, R3 relay output 2 A 250 V AC inductive 0.4 7 ms R1, R2, R3 relay output 2 A 30 V DC inductive 0.4 7 ms R1, R2, R3 relay output
Minimum switching current	Relay output R1, R2, R3 : 5 mA at 24 V DC
Isolation	Between power and control terminals
Number of power modules	3

Environment

Insulation resistance	> 1 mOhm 500 V DC for 1 minute to earth
Noise level	71 dB 86/188/EEC
Power dissipation in W	8780 W forced convection 2.5 kHz
THDI	<= 48 % full load conforming to IEC 61000-3-12
Electromagnetic compatibility	1.2/50 µs - 8/20 µs 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 <= 1000 m without derating
Environmental characteristic	Chemical pollution resistance class 3C3 conforming to EN/IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to EN/IEC 60721-3-3
Product certifications	TÜV REACH
Standards	EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1
Marking	CE