Product data sheet

Specifications

Variable speed drive, Altivar Process ATV600, APM, single 400 V, 560 kW

ATV6A0C56Q4

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	Synchronous motors Asynchronous motors
Mounting Mode	Cabinet mount
Kit Composition	1 control unit mechanical mounting kits power connection set of fuses 4 power module 160 kW 3 front cover
Emc Filter	Integrated with 300 m conforming to IEC 61800-3 category C3
Ip Degree Of Protection	IP00 (for IP21 or IP54 cabinet integration) conforming to IEC 61800-5-1 IP00 (for IP21 or IP54 cabinet integration) conforming to IEC 60529
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 %
Prospective Line Isc	50 kA
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…500 Hz
Nominal Switching Frequency	2.5 kHz
Switching Frequency	2.5...8 kHz with derating factor 2...8 kHz adjustable
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, Profibus DP V1 Slot A: communication module, PROFINET Slot A: communication module, DeviceNet Slot A: communication module, Modbus TCP/EtherNet/IP Slot A: communication module, CANopen daisy chain RJ45 Slot A: communication module, CANopen SUB-D 9 Slot A: communication module, CANopen screw terminals Slot A/slot B: digital and analog I/O extension module Slot A/slot B: output relay extension module

Complementary

Motor Power Kw	560.0 kW at 400 V normal duty 450.0 kW at 400 V heavy duty
Line Current	948.0 A at 400 V (normal duty) 767.0 A at 400 V (heavy duty)
Apparent Power	657 kVA at 400 V normal duty 531 kVA at 400 V heavy duty
Continuous Output Current	1020.0 A at 2.5 kHz normal duty 830.0 A at 2.5 kHz heavy duty
Maximum Transient Current	1122 A during 60 s (normal duty) 1245 A during 60 s (heavy duty)
Permissible Temporary Current Boost	1.1 x In during 60 s (normal duty) 1.5 x In during 60 s (heavy duty)
Output Voltage	<= power supply voltage
Motor Slip Compensation	Can be suppressed Adjustable Automatic whatever the load 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	Thermal protection: motor Safe torque off: motor Motor phase break: motor Thermal protection: drive Safe torque off: drive Overheating: drive Overcurrent between output phases and earth: drive Overload of output voltage: drive Short-circuit protection: drive Motor phase break: drive Overvoltages on the DC bus: drive Line supply overvoltage: drive Line supply undervoltage: drive Line supply phase loss: drive Overspeed: drive Break on the control circuit: drive
Frequency Resolution	Display unit: 0.1 Hz Analog input: 0.012/50 Hz
Electrical Connection	Control: removable screw terminals 0.5...1.5 mm²/AWG 20...AWG 16 Line side: screw terminal Motor: M10 x 2 bars
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 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 Modbus TCP
Supply	External supply for digital inputs: 24 V DC (19…30 V), <1.25 mA, protection type: overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection Internal supply for digital inputs and STO: 24 V DC (21…27 V), <200 mA, protection type: 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 Type	AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 30 kOhm, resolution 12 bits AI1, AI2, AI3 software-configurable current: 0...20 mA/4...20 mA, impedance: 250 Ohm, resolution 12 bits
Discrete Input Type	DI1...DI6 programmable, 24 V DC (<= 30 V), impedance: 3.5 kOhm DI5, DI6 programmable as pulse input: 0…30 kHz, 24 V DC (<= 30 V) STOA, STOB safe torque off, 24 V DC (<= 30 V), impedance: > 2.2 kOhm
Input Compatibility	DI1...DI6: discrete input level 1 PLC conforming to IEC 61131-2 DI5, DI6: discrete input level 1 PLC conforming to IEC 65A-68 STOA, STOB: discrete input level 1 PLC conforming to IEC 61131-2
Discrete Input Logic	Positive logic (source) (DI1...DI6), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (DI1...DI6), > 16 V (state 0), < 10 V (state 1) Positive logic (source) (DI5, DI6), < 0.6 V (state 0), > 2.5 V (state 1) Positive logic (source) (STOA, STOB), < 5 V (state 0), > 11 V (state 1)
Analogue Output Type	Software-configurable voltage AO1, AO2: 0...10 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AO1, AO2: 0...20 mA, resolution 10 bits
Sampling Duration	2 ms +/- 0.5 ms (DI1...DI4) - discrete input 5 ms +/- 1 ms (DI5, DI6) - discrete input 5 ms +/- 0.1 ms (AI1, AI2, AI3) - analog input 10 ms +/- 1 ms (AO1) - analog output
Accuracy	+/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input +/- 1 % AO1, AO2 for a temperature variation 60 °C analog output
Linearity Error	AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input AO1, AO2: +/- 0.2 % for analog output
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)
Minimum Switching Current	Relay output R1, R2, R3: 5 mA at 24 V DC
Maximum Switching Current	Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 250 V AC Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 30 V DC Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC

Environment

Noise Level	73 dB conforming to 86/188/EEC
Power Dissipation In W	Forced convection: 12450 W, switching frequency 2.5 kHz
Maximum Thdi	<48 % full load conforming to IEC 61000-3-12
Electromagnetic Compatibility	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
Pollution Degree	2 conforming to IEC 61800-5-1

Vibration Resistance	1.5 mm peak to peak (f= 2…13 Hz) conforming to IEC 60068-2-6 0.5 gn (f= 13…200 Hz) conforming to IEC 60068-2-6
Shock Resistance	7 gn for 11 ms conforming to IEC 60068-2-27
Relative Humidity	5…95 % without condensation conforming to IEC 60068-2-3
Ambient Air Temperature For Storage	-40…70 °C
Operating Altitude	<= 1000 m without derating 1000...4800 m with current derating 1 % per 100 m
Environmental Characteristic	Chemical pollution resistance class 3C3 conforming to IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to IEC 60721-3-3
Standards	IEC 61800-3 IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1
Product Certifications	TÜV UL
Marking	CE