

ATV930C22N4

Variable speed drive, Altivar Process ATV900, ATV930, 220 kW, 400/480 V, with braking unit, IP00



Main

Device Application	Industrial Application
Device short name	ATV930
Product destination	Asynchronous motors Synchronous motors
EMC filter	Integrated 164.04 ft (50 m) EN/IEC 61800-3 category C3
IP degree of protection	IP00 IEC 61800-5-1 IP00 IEC 60529 IP21 IEC 61800-5-1 with kit VW3A9112 IP21 IEC 60529 with kit VW3A9112
Type of cooling	Forced convection
Supply frequency	50...60 Hz +/- 5 %
Phase	3 phase
Motor power kW	160 kW heavy duty) 220 kW normal duty)
Maximum Horse Power Rating	350 Hp normal duty 250 hp heavy duty
Line current	397 A 380 V normal duty) 324 A 480 V normal duty) 296 A 380 V heavy duty) 246 A 480 V heavy duty)
Continuous output current	302 A 2.5 kHz heavy duty 427 A 2.5 kHz normal duty
Maximum transient current	453 A 60 s heavy duty) 512 A 60 s normal duty)
Speed drive output frequency	0.1...599 Hz
Safety function	STO (safe torque off) SIL 3
Option module	Slot A communication module Profibus DP V1 Slot A communication module Profinet Slot A communication module DeviceNet Slot A communication module EtherCAT 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/slot C digital and analog I/O extension module Slot A/slot B/slot C output relay extension module Slot B 5/12 V digital encoder interface module Slot B analog encoder interface module Slot B resolver encoder interface module Communication module Ethernet Powerlink
Range of product	Altivar Process ATV900
Product or Component Type	Variable speed drive
Variant	Standard version With braking chopper
Mounting Mode	Wall mount
Communication port protocol	Modbus serial Modbus TCP EtherNet/IP
[Us] rated supply voltage	380...480 V - 15...10 %
IP degree of protection	IP00

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Complementary

Output voltage	$\leq$ power supply voltage
Frequency resolution	Display unit 0.1 Hz Analog input 0.012/50 Hz
Electrical connection	Control screw terminal 0.5...1.5 mm ² AWG 20...AWG 16 Line side screw terminal 2 x 150 mm ² 2 x 350 kcmil Motor screw terminal 2 x 150 mm ² 2 x 350 kcmil DC bus screw terminal 2 x 150 mm ² 2 x 350 kcmil
Connector type	2 RJ45 Ethernet IP/Modbus TCP on the control block 1 RJ45 Modbus serial on the control block
Physical interface	2-wire RS 485 Modbus serial
Transmission frame	RTU Modbus serial
Transmission Rate	10/100 Mbit/s Ethernet IP/Modbus TCP 4.8, 9.6, 19.2, 38.4 kbit/s Modbus serial
Exchange mode	Half duplex, full duplex, autonegotiation Ethernet IP/Modbus TCP
Data format	8 bits, configurable odd, even or no parity Modbus serial
Type of polarization	No impedance Modbus serial
Number of addresses	1...247 Modbus serial
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	Local diagnostic 3 LED mono/dual colour) Presence of voltage 1 LED red) Embedded communication status 3 LED dual colour) Communication module status 4 LED dual colour)
Input compatibility	DI1...DI8 discrete input level 1 PLC EN/IEC 61131-2 DI7, DI8 pulse input level 1 PLC IEC 65A-68 STOA, STOB discrete input level 1 PLC EN/IEC 61131-2
Discrete input logic	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 Positive logic (source) STOA, STOB), < 5 V, > 11 V
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	AI1, AI2, AI3 +/- 0.15 % of maximum value analog input AQ1, AQ2 +/- 0.2 % analog output
Refresh time	Relay output R1, R2, R3) 5 ms +/- 0.5 ms)
Isolation	Between power and control terminals
Variable speed drive application selection	Food and beverage processing Mixer Food and beverage processing Conveyor Food and beverage processing Shredder Hoisting Process crane Marine Thruster Marine Winch Material working (wood, ceramic, stone, pvc, metal) Press Material working (wood, ceramic, stone, pvc, metal) Extruder Mining mineral and metal Other application Oil and gas Drilling rig Oil and gas Progressive cavity pump Oil and gas Rod pump Oil and gas Swapping pump Oil and gas Compressor for regasification Oil and gas Separator Oil and gas Other application Water and waste water Separator
Power range	110...220 KW 380...440 V 3 phase 110...220 kW 480...500 V 3 phase
Discrete input number	10
Discrete input type	DI1...DI8 programmable, 24 V DC $\leq$ 30 V) 3.5 kOhm DI7, DI8 programmable as pulse input 0...30 kHz, 24 V DC $\leq$ 30 V) STOA, STOB safe torque off, 24 V DC $\leq$ 30 V) > 2.2 kOhm

Number of preset speeds	16 preset speeds
Discrete output number	2
Discrete output type	Logic output DQ+ 0...1 kHz <= 30 V DC 100 mA Programmable as pulse output DQ+ 0...30 kHz <= 30 V DC 20 mA Logic output DQ- 0...1 kHz <= 30 V DC 100 mA
Analogue input number	3
Analogue input type	AI1, AI2, AI3 software-configurable voltage 0...10 V DC 30 kOhm 12 bits AI1, AI2, AI3 software-configurable current 0...20 mA/4...20 mA 250 Ohm 12 bits
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
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
Maximum switching current	Relay output R1 resistive, cos phi = 1 3 A 250 V AC Relay output R1 resistive, cos phi = 1 3 A 30 V DC Relay output R1 inductive, cos phi = 0.4 7 ms 2 A 250 V AC Relay output R1 inductive, cos phi = 0.4 7 ms 2 A 30 V DC Relay output R2, R3 resistive, cos phi = 1 5 A 250 V AC Relay output R2, R3 resistive, cos phi = 1 5 A 30 V DC Relay output R2, R3 inductive, cos phi = 0.4 7 ms 2 A 250 V AC Relay output R2, R3 inductive, cos phi = 0.4 7 ms 2 A 30 V DC
Minimum switching current	Relay output R1, R2, R3 5 mA 24 V DC
Method of access	Slave Modbus TCP
Asynchronous motor control profile	Constant torque standard Variable torque standard Optimized torque mode
Synchronous motor control profile	Permanent magnet motor Synchronous reluctance motor
Acceleration and deceleration ramps	Linear adjustable separately from 0.01...9999 s
Motor slip compensation	Adjustable Automatic whatever the load Not available in permanent magnet motor law Can be suppressed
Switching frequency	1...8 kHz adjustable 2.5...8 kHz with derating factor
Nominal switching frequency	2.5 kHz
Braking to standstill	By DC injection
Apparent power	247 KVA 480 V normal duty) 187 kVA 480 V heavy duty)
Prospective line Isc	50 kA
Power dissipation in W	Forced convection 5030 W 380 V 2.5 kHz Natural convection 451 W 380 V 2.5 kHz
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
Width	17.32 in (440 mm)
Height	47.05 in (1195 mm)
Depth	14.96 in (380 mm)
Product Weight	379.20 lb(US) (172 kg)

Environment

Insulation resistance	> 1 MOhm 500 V DC for 1 minute to earth
Noise level	73 dB 86/188/EEC
Vibration resistance	1.5 mm peak to peak 2...13 Hz)IEC 60068-2-6 1 gn 13...200 Hz)IEC 60068-2-6
Shock resistance	15 gn 11 ms IEC 60068-2-27
Environmental characteristic	Chemical pollution resistance class 3C2 EN/IEC 60721-3-3 Dust pollution resistance class 3S2 EN/IEC 60721-3-3
Pollution degree	2 EN/IEC 61800-5-1
Relative humidity	5...95 % without condensation IEC 60068-2-3
Ambient air temperature for operation	14...104 °F (-10...40 °C) without derating) 104...140 °F (40...60 °C) with derating factor)
Standards	UL 508C EN/IEC 61800-3 Environment 1 category C2 EN/IEC 61800-3 Environment 2 category C3 EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1
Operating altitude	<= 3280.84 ft (1000 m) without derating 3280.84...9842.52 ft (1000...3000 m) with current derating 1 % per 100 m
Operating position	Vertical +/- 10 degree
Product Certifications	CSA TÜV UL
Marking	CE
Maximum THDI	<48 % full load IEC 61000-3-12
Electromagnetic compatibility	Electrostatic discharge immunity test level 3 IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5 Conducted radio-frequency immunity test level 3 IEC 61000-4-6
Volume of cooling air	227192.03 Gal/hr(US) (860 m3/h)
Ambient Air Temperature for Storage	-13...158 °F (-25...70 °C)

Ordering and shipping details

Category	22278 - ATV930 FRAMES 5 & 6
Discount Schedule	CP4E
GTIN	3606481154743
Nbr. of units in pkg.	1
Package weight(Lbs)	403.45 lb(US) (183 kg)
Returnability	Yes
Country of origin	CN

Packing Units

Unit Type of Package 1	PCE
Package 1 Height	23.62 in (60 cm)
Package 1 width	25.98 in (66 cm)
Package 1 Length	55.51 in (141 cm)
Unit Type of Package 2	CAR
Number of Units in Package 2	1
Package 2 Weight	403.45 lb(US) (183 kg)
Package 2 Height	47.05 in (119.5 cm)
Package 2 width	17.32 in (44 cm)
Package 2 Length	14.96 in (38 cm)

Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
REACH Regulation	REACH Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS Declaration
Environmental Disclosure	Product Environmental Profile
Circularity Profile	End Of Life Information
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.
Upgradeability	Upgraded Components Available

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