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Product data sheet
Characteristics

ATV930D22M3
variable speed drive, ATV930, 22kW, 200/240V, with braking unit, IP21

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This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications.
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Main

Range of product	Altivar Process ATV900
Product or component type	Variable speed drive
Device application	Industrial Application
Device short name	ATV930
Variant	Standard version With braking chopper
Product destination	Asynchronous motors Synchronous motors
EMC filter	Without EMC filter
IP degree of protection	IP21 IEC 61800-5-1 IP21 IEC 60529
Degree of protection	UL type 1 UL 508C
Type of cooling	Forced convection
Supply frequency	50...60 Hz +/- 5 %
Phase	3 phases
[Us] rated supply voltage	200...240 V - 15...10 %
Motor power kW	22 KW normal duty) 18.5 kW heavy duty)
Maximum Horse Power Rating	30 Hp normal duty 25 hp heavy duty
Line current	76 A 200 V normal duty) 64.3 A 240 V normal duty) 64.8 A 200 V heavy duty) 54.5 A 240 V heavy duty)
Prospective line Isc	50 kA
Apparent power	26.7 KVA 240 V normal duty) 22.7 kVA 240 V heavy duty)
Continuous output current	92.6 A 4 kHz normal duty 78.4 A 4 kHz heavy duty
Maximum transient current	111.1 A 60 s normal duty) 117.6 A 60 s heavy duty)
Asynchronous motor control profile	Variable torque standard Optimized torque mode Constant torque standard
Synchronous motor control profile	Permanent magnet motor Synchronous reluctance motor
Speed drive output frequency	0.1…599 Hz
Nominal switching frequency	4 kHz
Switching frequency	2...16 kHz adjustable 4...16 kHz with derating factor
Safety function	STO (safe torque off) SIL 3
Number of preset speeds	16 preset speeds

Communication port protocol	Modbus serial Modbus TCP Ethernet/IP
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 EtherCAT 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/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

Complementary

Output voltage	<= power supply voltage
Motor slip compensation	Adjustable Not available in permanent magnet motor law Automatic whatever the load Can be suppressed
Acceleration and deceleration ramps	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 screw terminal 0.5...1.5 mm² AWG 20...AWG 16 Line side screw terminal 35...50 mm² AWG 2...AWG 1 Motor screw terminal 50 mm² AWG 1 DC bus: screw terminal35...50 mm²/AWG 3...AWG 1
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 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	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	Local diagnostic 3 LED mono/dual colour) Embedded communication status 5 LED dual colour) Communication module status 2 LED dual colour) Presence of voltage 1 LED red)
Maximum Width	8.90 in (226 mm)
Height	26.50 in (673 mm)
Depth	10.79 in (274 mm)
Net Weight	60.19 lb(US) (27.3 kg)
Analogue input number	3
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 number	10
Discrete input type	DI1...DI8 programmable, 24 V DC (<= 30 V), impedance: 3.5 kOhm DI7, DI8 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...DI8: discrete input level 1 PLC conforming to EN/IEC 61131-2 DI7, DI8: pulse input level 1 PLC conforming to IEC 65A-68 STOA, STOB: discrete input level 1 PLC conforming to EN/IEC 61131-2
Discrete input logic	Positive logic (source) (DI1...DI8), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (DI1...DI8), > 16 V (state 0), < 10 V (state 1) Positive logic (source) (DI7, DI8), < 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 number	2
Analogue output type	Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AQ1, AQ2: 0...20 mA impedance 500 Ohm, resolution 10 bits
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
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 for analog input AQ1, AQ2: +/- 0.2 % for analog output
Maximum switching current	Relay output R1 on resistive load, cos phi = 1: 3 A at 250 V AC Relay output R1 on resistive load, cos phi = 1: 3 A at 30 V DC Relay output R1 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R1 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC Relay output R2, R3 on resistive load, cos phi = 1: 5 A at 250 V AC Relay output R2, R3 on resistive load, cos phi = 1: 5 A at 30 V DC Relay output R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC
Relay output number	3
Relay output type	Configurable relay logic R1: fault relay NO/NC electrical durability 100000 cycles Configurable relay logic R2: sequence relay NO electrical durability 1000000 cycles Configurable relay logic R3: sequence relay NO electrical durability 1000000 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
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	15…25 kW 200…240 V 3 phase
Mounting mode	Wall mount

Environment

Insulation resistance	> 1 MOhm 500 V DC for 1 minute to earth
Noise level	71.5 dB 86/188/EEC
Power dissipation in W	Natural convection 107 W 200 V 4 kHz Forced convection 707 W 200 V 4 kHz
Vibration resistance	1.5 mm peak to peak (f= 2…13 Hz) conforming to IEC 60068-2-6 1 gn (f= 13…200 Hz) conforming to IEC 60068-2-6
Shock resistance	15 gn 11 ms IEC 60068-2-27
Volume of cooling air	63402.43 Gal/hr(US) (240 m3/h)
Operating position	Vertical +/- 10 degree
Maximum THDI	<48 % from 80...100 % of load 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
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
Pollution degree	2 conforming to EN/IEC 61800-5-1
Relative humidity	5…95 % without condensation conforming to IEC 60068-2-3
Ambient air temperature for operation	5…122 °F (-15…50 °C) without derating) 122…140 °F (50…60 °C) with derating factor)
Ambient air temperature for storage	-40…158 °F (-40…70 °C)
Operating altitude	<= 1000 m without derating 1000...4800 m with current derating 1 % per 100 m
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
Product certifications	TÜV UL CSA
Marking	CE

Ordering and shipping details

Category	22277 - ATV930 FRAMES 3 & 4
Discount Schedule	CP4E
GTIN	00785901772347
Nbr. of units in pkg.	1
Package weight(Lbs)	55.1 lb(US) (24.99 kg)

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Returnability	No
Country of origin	IN

Packing Units

Package 1 Height	5.000 dm
Package 1 width	3.450 dm
Package 1 Length	8.450 dm

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

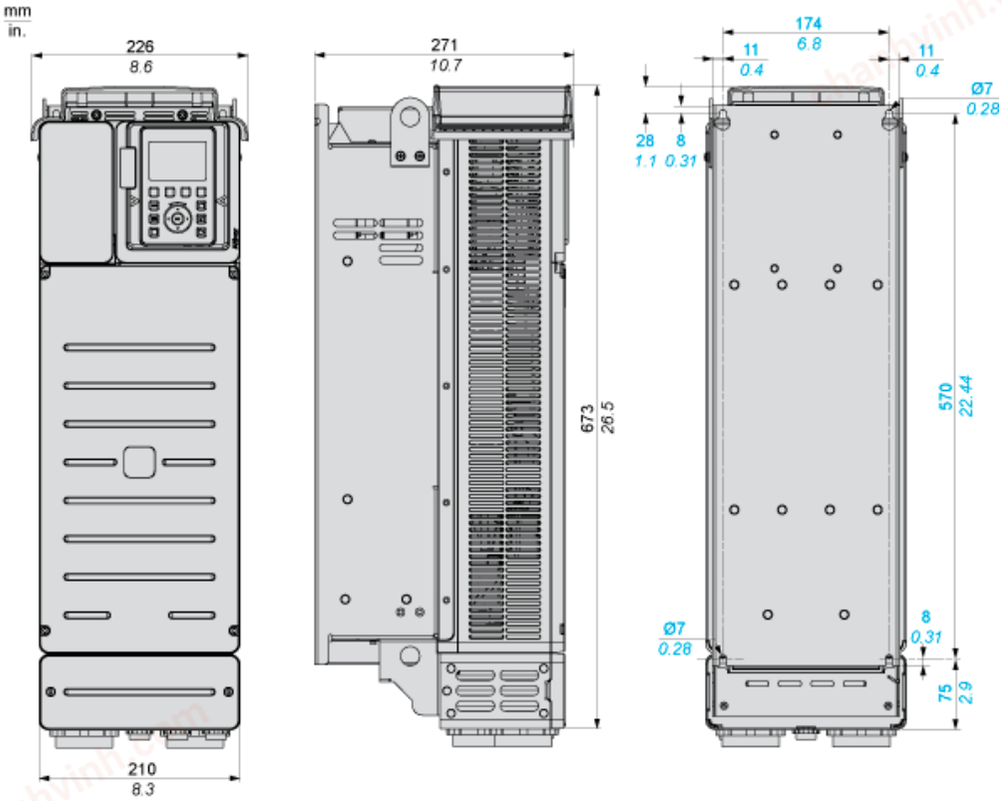
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Product data sheet
Dimensions Drawings

ATV930D22M3

Dimensions

IP21 / UL Type 1 Drives - Front, Left Side and Rear View

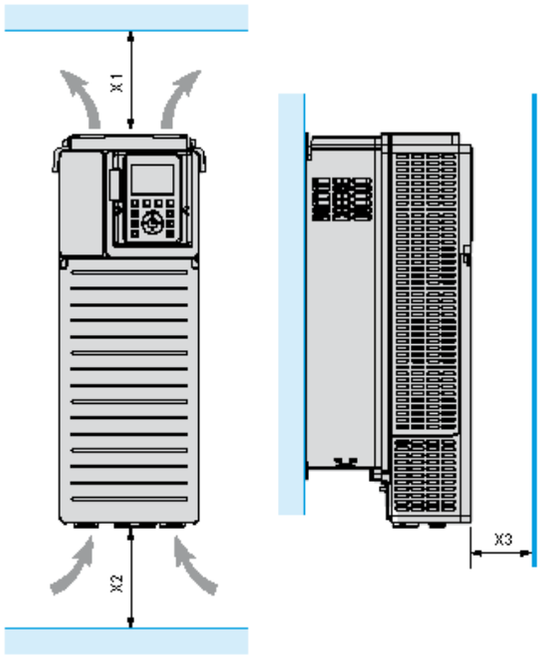


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Product data sheet
Mounting and Clearance

ATV930D22M3

Clearances

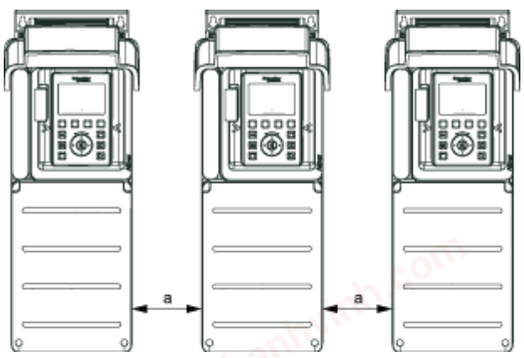


X1	X2	X3
≥ 100 mm (3.94 in.)	≥ 100 mm (3.94 in.)	≥ 10 mm (0.39 in.)

- Mount the device in a vertical position (±10°). This is required for cooling the device.
- Do not mount the device close to heat sources.
- Leave sufficient free space so that the air required for cooling purposes can circulate from the bottom to the top of the drive.

Mounting Types

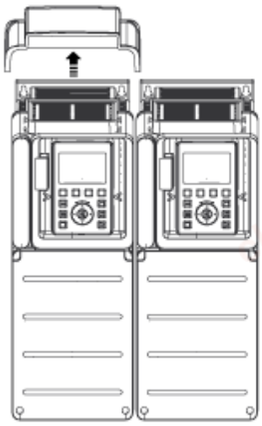
Mounting Type A: Individual IP21



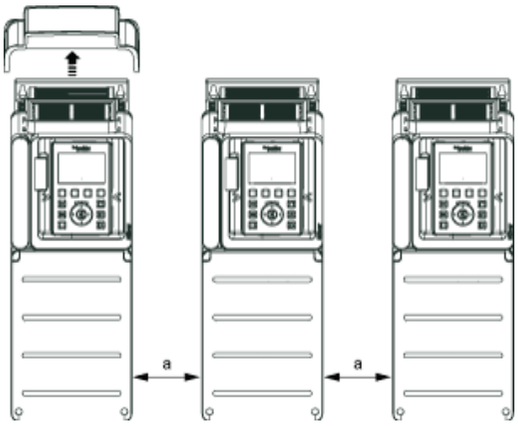
a ≥ = 110 mm (4.33 in.)

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Mounting Type B: Side by Side IP20 (Possible, 2 Drives Only)



Mounting Type C: Individual IP20



a ≥ = 110 mm (4.33 in.)