

# ATV930D22M3

Variable speed drive, Altivar Process ATV900,  
ATV930, 22 kW, 200/240 V, with braking unit,  
IP21



Product availability: Non-Stock - Not normally stocked in distribution facility

Price\*: 4603.00 USD



## 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<br>With braking chopper                                                                     |
| Product destination        | Asynchronous motors<br>Synchronous motors                                                                    |
| EMC filter                 | Without EMC filter                                                                                           |
| IP degree of protection    | IP21 IEC 61800-5-1<br>IP21 IEC 60529                                                                         |
| Degree of protection       | UL type 1 UL 508C                                                                                            |
| Type of cooling            | Forced convection                                                                                            |
| Supply frequency           | 50...60 Hz +/- 5 %                                                                                           |
| Phase                      | 3 phase                                                                                                      |
| [Us] rated supply voltage  | 200...240 V - 15...10 %                                                                                      |
| Motor power kW             | 22 KW normal duty)<br>18.5 KW heavy duty)                                                                    |
| Maximum Horse Power Rating | 30 Hp normal duty<br>25 Hp heavy duty                                                                        |
| Line current               | 76 A 200 V normal duty)<br>64.3 A 240 V normal duty)<br>64.8 A 200 V heavy duty)<br>54.5 A 240 V heavy duty) |
| Prospective line Isc       | 50 KA                                                                                                        |
| Apparent power             | 26.7 KVA 240 V normal duty)<br>22.7 KVA 240 V heavy duty)                                                    |
| Continuous output current  | 92.6 A 4 kHz normal duty<br>78.4 A 4 kHz heavy duty                                                          |
| Maximum transient current  | 111.1 A 60 s normal duty)<br>117.6 A 60 s heavy duty)                                                        |

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| Asynchronous motor control profile | Variable torque standard<br>Optimized torque mode<br>Constant torque standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Synchronous motor control profile  | Permanent magnet motor<br>Synchronous reluctance motor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Speed drive output frequency       | 0.1...599 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Nominal switching frequency        | 4 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Switching frequency                | 2...16 kHz adjustable<br>4...16 kHz with derating factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Safety function                    | STO (safe torque off) SIL 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Discrete input logic               | 16 preset speeds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Communication Port Protocol        | Modbus serial<br>Modbus TCP<br>EtherNet/IP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Option card                        | Slot A: communication module for Profibus DP V1<br>Slot A: communication module for Profinet<br>Slot A: communication module for DeviceNet<br>Slot A: communication module for EtherCAT<br>Slot A: communication module for CANopen daisy chain RJ45<br>Slot A: communication module for CANopen SUB-D 9<br>Slot A: communication module for CANopen screw terminals<br>Slot A/slot B/slot C: digital and analog I/O extension module<br>Slot A/slot B/slot C: output relay extension module<br>Slot B: 5/12 V digital encoder interface module<br>Slot B: analog encoder interface module<br>Slot B: resolver encoder interface module<br>communication module Ethernet Powerlink |

## Complementary

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output voltage                      | <= power supply voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Motor slip compensation             | Adjustable<br>Not available in permanent magnet motor law<br>Automatic whatever the load<br>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<br>Safe torque off motor<br>Motor phase break motor<br>Thermal protection drive<br>Safe torque off drive<br>Overheating drive<br>Overcurrent between output phases and earth drive<br>Overload of output voltage drive<br>Short-circuit protection drive<br>Motor phase break drive<br>Overvoltages on the DC bus drive<br>Line supply overvoltage drive<br>Line supply undervoltage drive<br>Line supply phase loss drive<br>Overspeed drive<br>Break on the control circuit drive |
| Frequency resolution                | Display unit 0.1 Hz<br>Analog input: 0.012/50 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Electrical connection               | Control screw terminal 0.5...1.5 mm² AWG 20...AWG 16<br>Line side screw terminal 35...50 mm² AWG 2...AWG 1<br>Motor screw terminal 50 mm² AWG 1<br>DC bus: screw terminal 35...50 mm²/AWG 3...AWG 1                                                                                                                                                                                                                                                                                                          |
| Connector type                      | 2 RJ45 Ethernet IP/Modbus TCP on the control block<br>1 RJ45 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<br>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 Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Method of access          | Slave Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Supply                    | External supply for digital inputs 24 V DC 19...30 V), <1.25 mA overload and short-circuit protection<br>Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V D-C +/- 5 %, <10 mA, protection type: overload and short-circuit protection<br>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)<br>Embedded communication status 5 LED dual colour)<br>Communication module status 2 LED dual colour)<br>Presence of voltage 1 LED red)                                                                                                                                                                                                                                                                                                             |
| Maximum Width             | 8.90 In (226 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Maximum Height            | 26.50 In (673 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum 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<br>AI1, AI2, AI3 software-configurable current 0...20 mA/4...20 mA 250 Ohm 12 bits                                                                                                                                                                                                                                                                                                          |
| Discrete input number     | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Discrete input type       | DI1...DI8 programmable, 24 V DC (<= 30 V), impedance: 3.5 kOhm<br>DI7, DI8 programmable as pulse input 0...30 kHz, 24 V DC <= 30 V)<br>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<br>DI7, DI8: pulse input level 1 PLC conforming to IEC 65A-68<br>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)<br>Negative logic (sink) (DI1...DI8), > 16 V (state 0), < 10 V (state 1)<br>Positive logic (source) (DI7, DI8), < 0.6 V (state 0), > 2.5 V (state 1)<br>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 470 Ohm 10 bits<br>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 <= 30 V DC 100 mA<br>Programmable as pulse output DQ+ 0...30 kHz <= 30 V DC 20 mA<br>Logic output DQ- 0...1 kHz <= 30 V DC 100 mA                                                                                                                                                                                                                                                                                                                                 |
| Sampling duration         | 2 Ms +/- 0.5 ms DI1...DI8) - discrete input<br>5 Ms +/- 1 ms DI7, DI8) - pulse input<br>1 Ms +/- 1 ms AI1, AI2, AI3) - analog input<br>5 Ms +/- 1 ms AQ1, AQ2) - analog output                                                                                                                                                                                                                                                                                                               |
| Accuracy                  | +/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input<br>+/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output                                                                                                                                                                                                                                                                                                                                                   |
| Linearity error           | AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input<br>AQ1, AQ2: +/- 0.2 % for analog output                                                                                                                                                                                                                                                                                                                                                                                         |
| Maximum switching current | Relay output R1 resistive, cos phi = 1 3 A 250 V AC<br>Relay output R1 resistive, cos phi = 1 3 A 30 V DC<br>Relay output R1 inductive, cos phi = 0.4 7 ms 2 A 250 V AC<br>Relay output R1 inductive, cos phi = 0.4 7 ms 2 A 30 V DC<br>Relay output R2, R3 resistive, cos phi = 1 5 A 250 V AC<br>Relay output R2, R3 resistive, cos phi = 1 5 A 30 V DC<br>Relay output R2, R3 inductive, cos phi = 0.4 7 ms 2 A 250 V AC<br>Relay output R2, R3 inductive, cos phi = 0.4 7 ms 2 A 30 V DC |
| Relay output number       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Relay output type         | Configurable relay logic R1 fault relay NO/NC 100000 cycles<br>Configurable relay logic R2 sequence relay NO 1000000 cycles<br>Configurable relay logic R3 sequence relay NO 1000000 cycles                                                                                                                                                                                                                                                                                                  |
| Refresh time              | Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Minimum switching current | Relay output R1, R2, R3 5 mA 24 V DC                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Isolation                 | Between power and control terminals                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Discrete and process manufacturing | Food and beverage processing Mixer<br>Food and beverage processing Conveyor<br>Food and beverage processing Shredder<br>Hoisting Process crane<br>Marine Thruster<br>Marine Winch<br>Material working (wood, ceramic, stone, pvc, metal) Press<br>Material working (wood, ceramic, stone, pvc, metal) Extruder<br>Mining mineral and metal Other application<br>Oil and gas Drilling rig<br>Oil and gas Progressive cavity pump<br>Oil and gas Rod pump<br>Oil and gas Swapping pump<br>Oil and gas Compressor for regasification<br>Oil and gas Separator<br>Oil and gas Other application<br>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<br>Forced convection 707 W 200 V 4 kHz                                                                                                                                                                                                                                                                                              |
| Vibration resistance                  | 1.5 mm peak to peak 2...13 Hz)IEC 60068-2-6<br>1 gn 13...200 Hz)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 IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3<br>Electrical fast transient/burst immunity test level 4 IEC 61000-4-4<br>1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5<br>Conducted radio-frequency immunity test level 3 IEC 61000-4-6 |
| Environmental characteristic          | Chemical pollution resistance class 3C3 conforming to EN/IEC 60721-3-3<br>Dust pollution resistance class 3S3 conforming to 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 | 5...122 °F (-15...50 °C) without derating)<br>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<br>1000...4800 m with current derating 1 % per 100 m                                                                                                                                                                                                                                                                                          |
| Standards                             | UL 508C<br>EN/IEC 61800-3<br>Environment 1 category C2 EN/IEC 61800-3<br>Environment 2 category C3 EN/IEC 61800-3<br>EN/IEC 61800-5-1<br>IEC 61000-3-12<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1                                                                                                                                                                       |
| Product Certifications                | TÜV<br>UL<br>CSA                                                                                                                                                                                                                                                                                                                                                         |
| Marking                               | CE                                                                                                                                                                                                                                                                                                                                                                       |

## Ordering and shipping details

|                       |                             |
|-----------------------|-----------------------------|
| Category              | 22277 - ATV930 FRAMES 3 & 4 |
| Discount Schedule     | CP4E                        |
| GTIN                  | 03606480883644              |
| Nbr. of units in pkg. | 1                           |
| Package weight(Lbs)   | 65.04 Lb(US) (29.5 kg)      |
| Returnability         | No                          |
| Country of origin     | IN                          |

## Packing Units

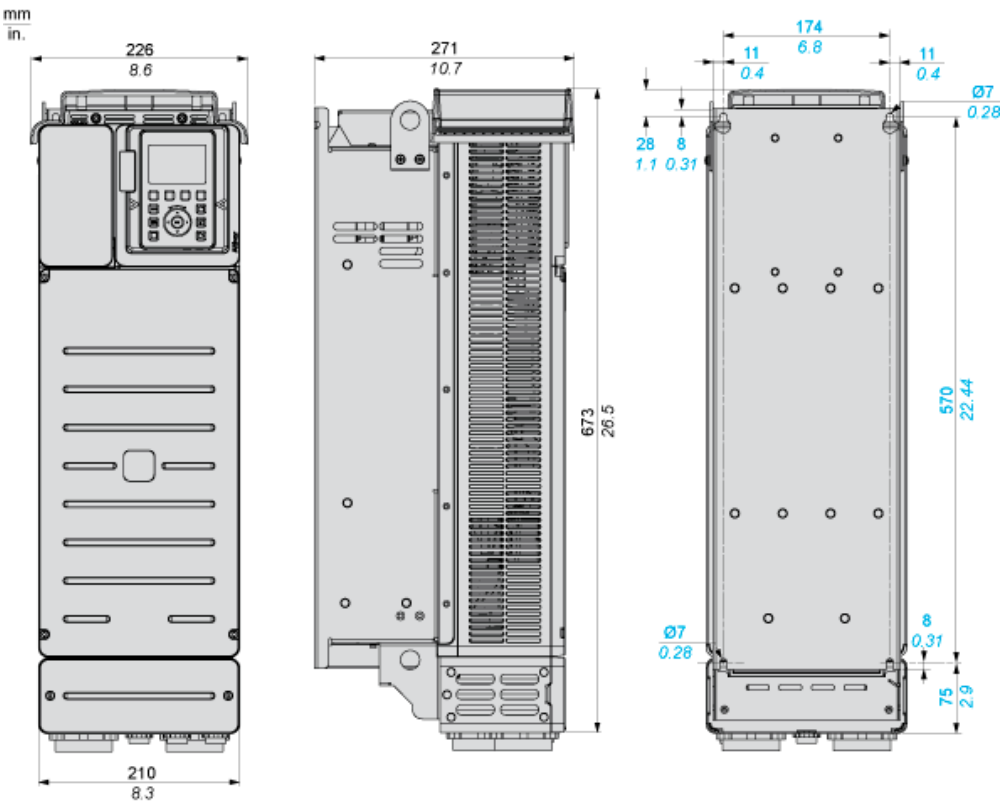
|                        |                  |
|------------------------|------------------|
| Unit Type of Package 1 | PCE              |
| Package 1 Height       | 16.14 In (41 cm) |
| Package 1 width        | 12.99 In (33 cm) |
| Package 1 Length       | 32.68 In (83 cm) |

## Offer Sustainability

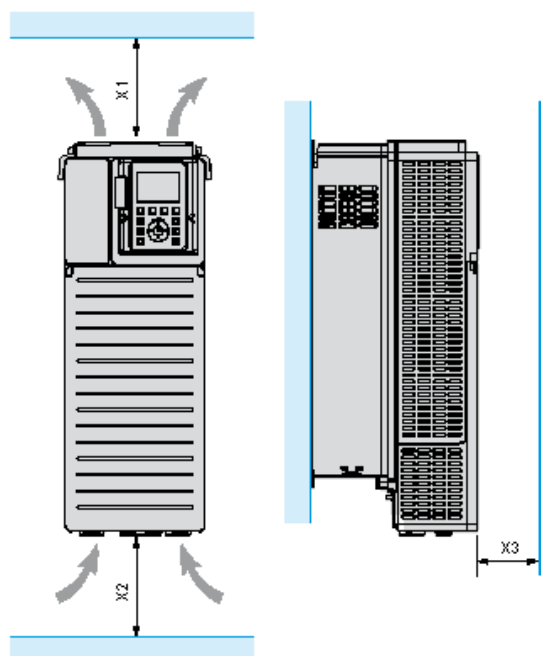
|                            |                                                                                                                                                                                                                                                                                             |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> |
| REACH Regulation           | <a href="#">REACH Declaration</a>                                                                                                                                                                                                                                                           |
| EU RoHS Directive          | Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>                                                                                                                                                                                              |
| Mercury free               | Yes                                                                                                                                                                                                                                                                                         |
| RoHS exemption information | <a href="#">Yes</a>                                                                                                                                                                                                                                                                         |
| China RoHS Regulation      | <a href="#">China RoHS Declaration</a>                                                                                                                                                                                                                                                      |
| Environmental Disclosure   | <a href="#">Product Environmental Profile</a>                                                                                                                                                                                                                                               |
| Circularity Profile        | <a href="#">End Of Life Information</a>                                                                                                                                                                                                                                                     |
| WEEE                       | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.                                                                                                                                                                |
| Upgradeability             | <a href="#">Upgraded Components Available</a>                                                                                                                                                                                                                                               |

Dimensions

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



## Clearances

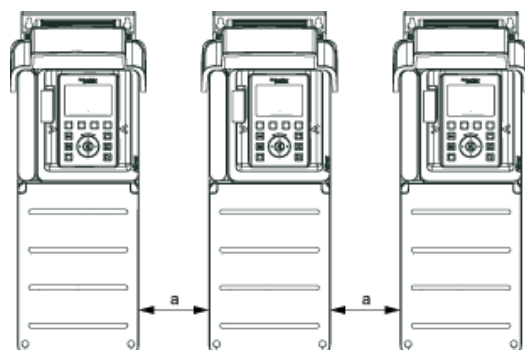


| X1                               | X2                               | X3                              |
|----------------------------------|----------------------------------|---------------------------------|
| $\geq 100 \text{ mm (3.94 in.)}$ | $\geq 100 \text{ mm (3.94 in.)}$ | $\geq 10 \text{ mm (0.39 in.)}$ |

- Mount the device in a vertical position ( $\pm 10^\circ$ ). 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.

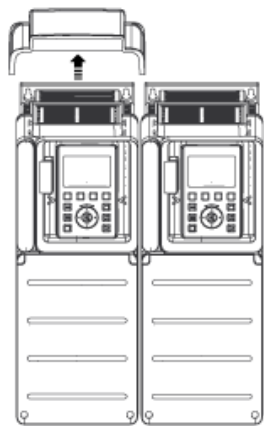
## Mounting Types

### Mounting Type A: Individual IP21

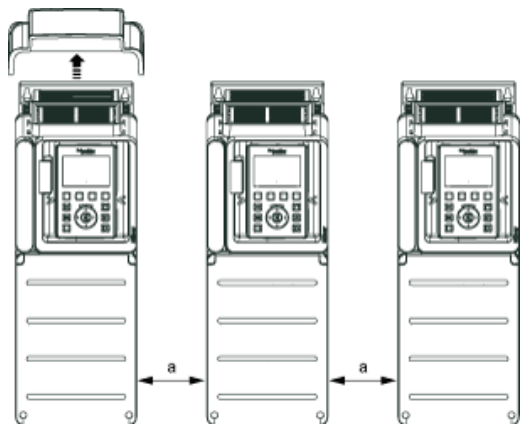


$a \geq 110 \text{ mm (4.33 in.)}$

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



Mounting Type C: Individual IP20



$a \geq 110 \text{ mm (4.33 in.)}$

|                       |                |
|-----------------------|----------------|
| Product Life Status : | Commercialised |
|-----------------------|----------------|