

## variable speed drive, Altivar Machine ATV320, 5.5kW, 380 to 500V, 3 phases, compact

ATV320U55N4C

### Main

| Range of product             | Altivar Machine ATV320  |  |
|------------------------------|---|--|
| Product or component type    | Variable speed drive  |  |
| Product specific application | Complex machines  |  |
| Variant                      | Standard version  |  |
| Format of the drive          | Compact   |  |
| Mounting mode                | Wall mount  |  |
| Communication port protocol  | Modbus serial<br>CANopen  |  |
| Option card                  | Communication module, CANopen Communication module, EtherCAT Communication module, Profibus DP V1 Communication module, PROFINET Communication module, Ethernet Powerlink Communication module, EtherNet/IP Communication module, DeviceNet |  |
| [Us] rated supply voltage    | 380500 V - 1510 %   |  |
| nominal output current       | 14.3 A  |  |
| Motor power kW               | 5.5 kW for heavy duty   |  |
| Motor power hp               | 7.5 hp  |  |
| EMC filter                   | Integrated  |  |
| IP degree of protection      | IP20  |  |

## Complementary

| Discrete input number  | 7   |
|------------------------|---|
| Discrete input type    | STO safe torque off, 24 V DC, impedance: 1.5 kOhm DI1DI6 logic inputs, 24 V DC (30 V) DI5 programmable as pulse input: 030 kHz, 24 V DC (30 V)  |
| Discrete input logic   | Positive logic (source)<br>Negative logic (sink)  |
| Discrete output number | 3   |
| Discrete output type   | Open collector DQ+ 01 kHz 30 V DC 100 mA<br>Open collector DQ- 01 kHz 30 V DC 100 mA  |
| Analogue input number  | 3   |
| Analogue input type    | Al1 voltage: 010 V DC, impedance: 30 kOhm, resolution 10 bits Al2 bipolar differential voltage: +/- 10 V DC, impedance: 30 kOhm, resolution 10 bits Al3 current: 020 mA (or 4-20 mA, x-20 mA, 20-x mA or other patterns by configuration), impedance: 250 Ohm, resolution 10 bits |
| Analogue output number | 1   |

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

| Analogue output type                                 | Software-configurable current AQ1: 020 mA impedance 800 Ohm, resolution 10 bits Software-configurable voltage AQ1: 010 V DC impedance 470 Ohm, resolution 10 bits  |  |
|--|--|--|
| Relay output type                                    | Configurable relay logic R1A 1 NO electrical durability 100000 cycles Configurable relay logic R1B 1 NC electrical durability 100000 cycles  |  |
|  | Configurable relay logic R1C Configurable relay logic R2A 1 NO electrical durability 100000 cycles   |  |
|  | Configurable relay logic R2C   |  |
| Maximum switching current                            | Relay output R1A, R1B, R1C on resistive load, cos phi = 1: 3 A at 250 V AC Relay output R1A, R1B, R1C on resistive load, cos phi = 1: 3 A at 30 V DC Relay output R1A, R1B, R1C, R2A, R2C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R1A, R1B, R1C, R2A, R2C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 250 V AC Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 30 V DC |  |
| Minimum switching current                            | Relay output R1A, R1B, R1C, R2A, R2C: 5 mA at 24 V DC  |  |
| Method of access                                     | Slave CANopen  |  |
| 4 quadrant operation possible                        | True   |  |
| Acunchronous mater control                           | Vallage fragmann until Engint  |  |
| Asynchronous motor control profile                   | Voltage/frequency ratio, 5 points Flux vector control without sensor, standard   |  |
|  | Voltage/frequency ratio - Energy Saving, quadratic U/f   |  |
|  | Flux vector control without sensor - Energy Saving   |  |
|  | Voltage/frequency ratio, 2 points  |  |
| Synchronous motor control profile                    | Vector control without sensor  |  |
| Maximum output frequency                             | 0.599 kHz  |  |
| Acceleration and deceleration ramps                  | Linear<br>U  |  |
|  | S  |  |
|  | CUS  |  |
|  | Ramp switching Acceleration/deceleration ramp adaptation   |  |
|  | Acceleration/deceleration automatic stop with DC injection   |  |
| Motor slip compensation                              | Automatic whatever the load  |  |
|  | Adjustable 0300 % Not available in voltage/frequency ratio (2 or 5 points)   |  |
|  |  |  |
| Switching frequency                                  | 216 kHz adjustable 416 kHz with derating factor  |  |
| Nominal switching frequency                          | 4 kHz  |  |
| Braking to standstill                                | By DC injection  |  |
| Brake chopper integrated                             | True   |  |
| Line current   | 20.7 A at 380 V (heavy duty)<br>14.5 A at 500 V (heavy duty)   |  |
| Maximum input current                                | 20.7 A   |  |
| Maximum output voltage                               | 500 V  |  |
| Apparent power                                       | 12.6 kVA at 500 V (heavy duty)   |  |
| Network frequency                                    | 5060 Hz  |  |
| Relative symmetric network frequency tolerance       | 5 %  |  |
| Prospective line Isc                                 | 22 kA  |  |
| Base load current at high overload                   | 14.3 A   |  |
| Power dissipation in W                               | Fan: 195.0 W at 380 V, switching frequency 4 kHz   |  |
| With safety function Safely<br>Limited Speed (SLS)   | True   |  |
| With safety function Safe brake management (SBC/SBT) | False  |  |
|  |  |  |

| With safety function Safe<br>Operating Stop (SOS)  | False  |
|--|--|
| With safety function Safe Position (SP)            | False  |
| With safety function Safe programmable logic       | False  |
| With safety function Safe Speed Monitor (SSM)      | False  |
| With safety function Safe Stop 1 (SS1)             | True   |
| With sft fct Safe Stop 2 (SS2)                     | False  |
| With safety function Safe torque off (STO)         | True   |
| With safety function Safely Limited Position (SLP) | False  |
|  |  |
| With safety function Safe Direction (SDI)          | False  |
|  | Input phase breaks: drive Overcurrent between output phases and earth: drive Overheating protection: drive Short-circuit between motor phases: drive Thermal protection: drive                   |
| Direction (SDI)                                    | Input phase breaks: drive Overcurrent between output phases and earth: drive Overheating protection: drive Short-circuit between motor phases: drive   |
| Direction (SDI) Protection type                    | Input phase breaks: drive Overcurrent between output phases and earth: drive Overheating protection: drive Short-circuit between motor phases: drive Thermal protection: drive                   |
| Direction (SDI) Protection type Width              | Input phase breaks: drive Overcurrent between output phases and earth: drive Overheating protection: drive Short-circuit between motor phases: drive Thermal protection: drive                   |
| Direction (SDI) Protection type  Width Height      | Input phase breaks: drive Overcurrent between output phases and earth: drive Overheating protection: drive Short-circuit between motor phases: drive Thermal protection: drive  150 mm  232.0 mm |

## **Environment**

| Operating position   | Vertical +/- 10 degree   |
|--|--|
| Product certifications   | CE ATEX NOM GOST EAC RCM KC  |
| Marking  | CE<br>ATEX<br>UL<br>CSA<br>EAC<br>RCM  |
| Standards  | IEC 61800-5-1  |
| 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 Voltage dips and interruptions immunity test conforming to IEC 61000-4-11 |
| Environmental class (during operation)                           | Class 3C3 according to IEC 60721-3-3<br>Class 3S2 according to IEC 60721-3-3   |
| Maximum acceleration under shock impact (during operation)       | 150 m/s² at 11 ms  |
| Maximum acceleration under vibrational stress (during operation) | 10 m/s² at 13200 Hz  |
| Maximum deflection under vibratory load (during operation)       | 1.5 mm at 213 Hz   |
| Permitted relative humidity (during operation)                   | Class 3K5 according to EN 60721-3  |

| Volume of cooling air                 | 60 m3/h  |
|---------------------------------------|--|
| Overvoltage category                  | III  |
| Regulation loop                       | Adjustable PID regulator                               |
| Speed accuracy                        | +/- 10 % of nominal slip 0.2 Tn to Tn                  |
| Pollution degree                      | 2  |
| Ambient air transport temperature     | -2570 °C   |
| Ambient air temperature for operation | -1050 °C without derating 5060 °C with derating factor |
| Ambient air temperature for storage   | -2570 °C   |

# **Packing Units**

| Unit Type of Package 1       | PCE       |
|------------------------------|-----------|
| Number of Units in Package 1 | 1         |
| Package 1 Height             | 19.500 cm |
| Package 1 Width              | 22.500 cm |
| Package 1 Length             | 33.000 cm |
| Package 1 Weight             | 4.696 kg  |
| Unit Type of Package 2       | P06       |
| Number of Units in Package 2 | 10        |
| Package 2 Height             | 75.000 cm |
| Package 2 Width              | 60.000 cm |
| Package 2 Length             | 80.000 cm |
| Package 2 Weight             | 57.500 kg |

## **Contractual warranty**

Warranty (in months)



Schneider Electric aims to achieve Net Zero status by 2050 through supply chain partnerships, lower impact materials, and circularity via our ongoing "Use Better, Use Longer, Use Again" campaign to extend product lifetimes and recyclability.

#### Environmental Data explained >

How we assess product sustainability >

| ☑ Environmental footprint        |      |  |
|----------------------------------|------|--|
| Total lifecycle Carbon footprint | 4080 |  |

#### **Use Better**

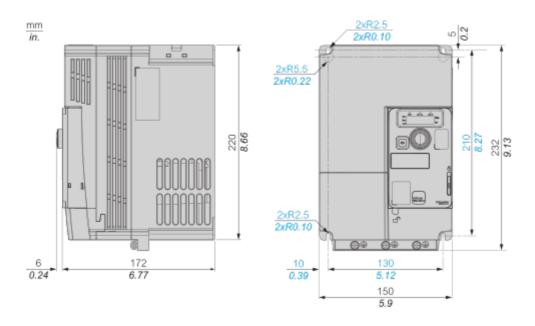
| Packaging made with recycled cardboard             | Yes  |
|--|--|
| Packaging without single use plastic               | No   |
| EU RoHS Directive                                  | Pro-active compliance (Product out of EU RoHS legal scope) |
| SCIP Number  | 14d809d0-5292-4a40-b69a-c03476cca11b                       |
| REACh Regulation                                   | REACh Declaration  |
| ₩ Energy efficiency                                |  |
| Product contributes to saved and avoided emissions | Yes  |

### **Use Again**

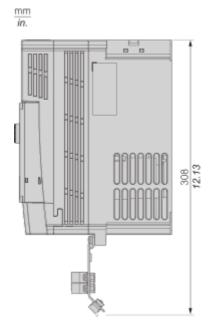
| ○ Repack and remanufacture      |   |
|---------------------------------|---|
| End of life manual availability | End of Life Information   |
| Take-back                       | No  |
| WEEE Label                      | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |

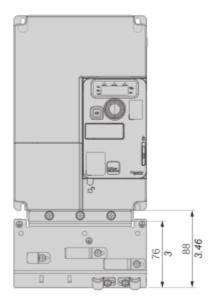
### **Dimensions Drawings**

### Right and Front Views without EMC Plate



### Right and Front Views with EMC Plate

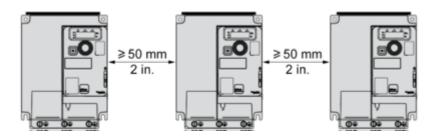




Mounting and Clearance

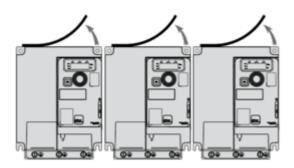
### **Mounting Types**

### Mounting Type A: Individual with Ventilation Cover

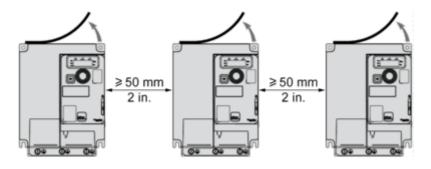


Only Possible at Ambient Temperature Less or Equal to 50 °C (122 °F)

### Mounting Type B: Side by Side, Ventilation Cover Removed



#### Mounting Type C: Individual, Ventilation Cover Removed

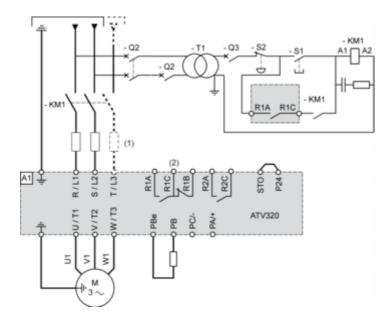


For Operation at Ambient Temperature Above 50  $^{\circ}\text{C}$  (122  $^{\circ}\text{F})$ 

Connections and Schema

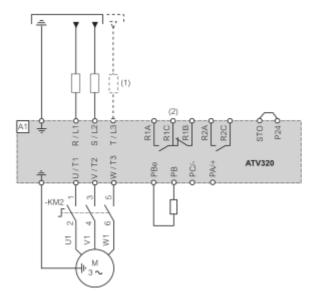
#### **Connection Diagrams**

#### Single or Three-phase Power Supply - Diagram With Line Contactor



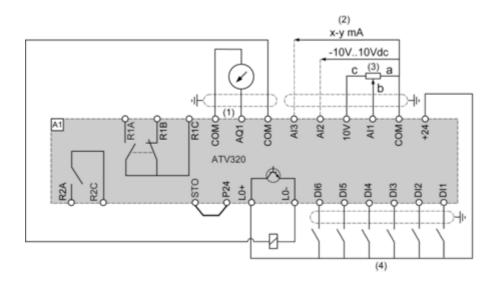
- (1) Line choke (if used)
- (2) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.

### Single or Three-phase Power Supply - Diagram With Downstream Contactor



- (1) Line choke (if used)
- (2) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.

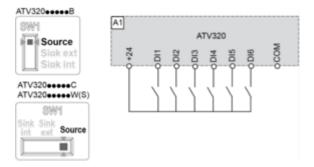
### **Control Block Wiring Diagram**



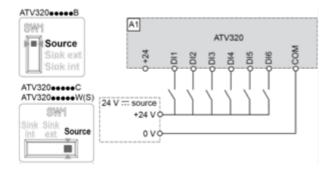
- (1) Analog output
- (2) Analog inputs
- (3) Potentiometer SZ1RV1202 (2.2 k $\Omega$ ) or similar (10 k $\Omega$  maximum)
- (4) Digital Inputs Shielding instructions are given in the Electromagnetic Compatibility section

#### **Digital Inputs Wiring**

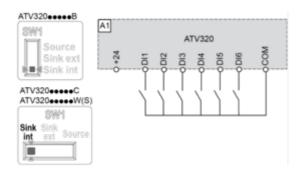
Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



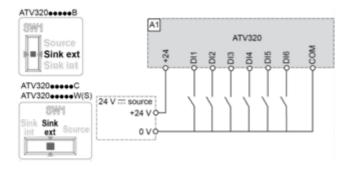
Switch Set to SRC (Source) Position and Use of an External Power Supply for the Digital Inputs



Switch Set to SK (Sink) Position Using the Output Power Supply for the Digital Inputs



Switch Set to EXT Position Using an External Power Supply for the Digital Inputs



#### NOTE:

• STO input is also connected by default on a 24 Vdc terminal. If the external power supply is switched off, the function STO will be triggered.

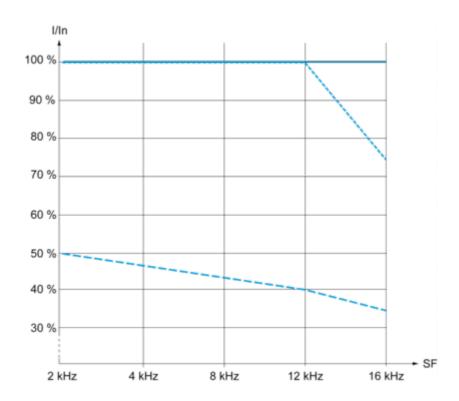
Dec 1, 2025

• To avoid triggering the STO function when switching-on the product, the external power supply must be previously switched on.

# Product datasheet ATV320U55N4C

#### Performance Curves

#### **Derating Curves**



40 °C (104 °F) - Mounting type A, B and C 50 °C (122 °F) - Mounting type C

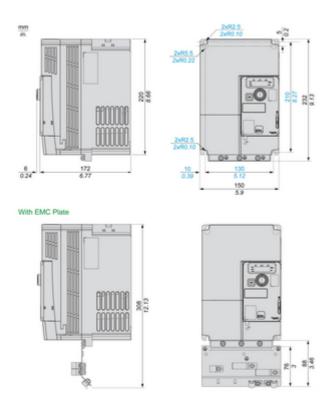
60 °C (122 °F) - Mounting type C

In: Nominal Drive Current SF: Switching Frequency

### ATV320U55N4C

### **Technical Illustration**

### **Dimensions**



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