# **Product datasheet**

Specification





# variable speed drive, ATV320, 0.55 kW, 380...500 V, 3 phases, book

ATV320U06N4B

## 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	Book
mounting mode	Cabinet mount
Communication port protocol	Modbus serial 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	1.9 A
Motor power kW	0.55 kW for heavy duty
EMC filter	Class C2 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) Negative logic (sink)
Discrete output number	3
Discrete output type	Open collector DQ+ 01 kHz 30 V DC 100 mA 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

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Analogue output type Schware-configurable current AQ1: 020 mA impedance 800 Ohm, resolution 10 bits Schware-configurable voltage AQ1: 010 V DC impedance 470 Ohm, resolution 10 bits Schware-configurable voltage AQ1: 010 V DC impedance 470 Ohm, resolution 10 bits Schware-configurable voltage AQ1: 010 V DC impedance 470 Ohm, resolution 10 bits Schware-configurable voltage AQ1: 010 V DC impedance 470 Ohm, resolution 10 bits Schware-configurable voltage AQ1: 010 V DC impedance 470 Ohm, resolution 10 obstacles and configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable relay logic R14 IN Celectrical durability 100000 cycles Configurable R14 IN Celectrical durability 100000 cycles Configurable R14 IN R18 R16 Celectrical durability 100000 cycles Configurable R14 IN R18 R18 R18 R18 R18 R16 Celectrical durability 100000 cycles P12 A R15 R14 IN R18		
Relay output type  Configurable relay logic R1A 1 NO electrical durability 100000 cycles Configurable relay logic R1A 1 NO electrical durability 100000 cycles Configurable relay logic R1A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 100000 cycles Configurable relay logic R2A 1 NO electrical durability 1 NO configurable relay logic R2A 1 NO electrical durability 1 NO configurability	Analogue output type	bits Software-configurable voltage AQ1: 010 V DC impedance 470 Ohm, resolution 10
Configurable relay logic R18 I NC electrical durability 100000 cycles Configurable relay logic R10 Configurable relay logic R10 Configurable relay logic R20 Conf		DIG
Configurable relay logic RZC 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 = 0.4 and LR = 7 ms. Z Ad 250 V AC Relay output R1A, R1B, R1C, R2A, R2C on inductive load, cos phi = 0.4 and LR = 7 ms. Z Ad 250 V AC Relay output R1A, R1B, R1C, R2A, R2C on inductive load, cos phi = 0.4 and LR = 7 ms. Z Ad 350 V DC Relay output R1A, R1B, R1C, R2A, R2C on resistive load, cos phi = 1: 5 A at 250 V AC Relay output R1A, R1B, R1C, R2A, R2C: 5 mA at 24 V DC Relay output R1A, R1B, R1C, R2A, R2C: 5 mA at	Relay output type	
Configurable relay logic RZC  Maximum switching current Relay output R1A, R1B, R1C on resistive load, cos phi = 1: 3 A at 350 V DC Relay output R1A, R1B, R1C on resistive load, cos phi = 1: 3 A at 350 V DC Relay output R1A, R1B, R1C on resistive load, cos phi = 0.4 and LIR = 7 ms: 2 A at 250 V AC Relay output R1A, R1B, R1C, R2A, R2C on inductive load, cos phi = 0.4 and LIR = 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 250 V AC 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 250 V AC Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 30 V DC  Minimum switching current Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 30 V DC  Minimum switching current Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 30 V DC  Minimum switching current Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 30 V DC  Minimum switching current Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 30 V DC  Minimum switching current Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 30 V DC  Minimum switching current Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 30 V DC  Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 30 V R2A R2C on resistive load, cos phi = 1: 5 A at 30 V R2A R2C R2A R2C R2A R2C R2C R2A R2A R2C R2A R2A R2C R2A R2A R2C R2C R2A R2C R2C R2A R2C R2C R2A R2C		
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 LIR = 7 ms: 2 A at 250 V AC Relay output R1A, R1B, R1C, R2A, R2C on inductive load, cos phi = 0.4 and LIR = 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 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  Minimum switching current Relay output R1A, R1B, R1C, R2A, R2C; 5 mA at 24 V DC  Minimum switching current Voltage/frequency ratio, 5 points Flux vector control without sensor, standard Voltage/frequency ratio, 2 points Flux vector control without sensor - Energy Saving, quadratic U/f Flux vector control without sensor - Energy Saving Voltage/frequency ratio, 2 points Flux vector control without sensor - Energy Saving Voltage/frequency ratio, 2 points Synchronous motor control profile Vector control without sensor - Energy Saving Voltage/frequency at 170200 % of nominal motor torque  Maximum output frequency 0.599 k1z  Cus Cus Ramp switching Racceleration and deceleration Acceleration deceleration ramp adaptation Acceleration deceleration ramp adaptation Acceleration deceleration ramp adaptation Acceleration deceleration ramp adaptation Acceleration frequency 2.16 k1z adjustable 4.16 k1z with derating factor  Nominal switching frequency 4 kHz  Braking to standatill By DC injection  Brake chopper integrated True 2.8 A at 380 V (heavy duty)  Maximum output voltage Space A at 380 V (heavy duty)  Maximum output voltage 500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Notwork frequency 5060 Hz  Relative symmetric network frequency blorance Freprospective line for		
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 350 V AC Relay output R2A, R2C on resistive load, cos phi = 1: 5 A at 350 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  Minimum switching current Relay output R1A, R1B, R1C, R2A, R2C: 5 mA at 24 V DC  Method of access Slave CANopen 1 rue  Asynchronous motor control Profile Voltage/frequency ratio, 5 points Flux vector control without sensor, standard Voltage/frequency ratio, 5 points Flux vector control without sensor - Energy Saving, quadratic U/I Flux vector control without sensor - Energy Saving Voltage/frequency ratio, 2 points  Synchronous motor control profile Vector control without sensor - Energy Saving Voltage/frequency ratio, 2 points  Provided frequency 170200 % of nominal motor torque  Maximum output frequency 170200 % of nominal motor torque  Maximum output frequency 216 kHz adjustable A300 % Not available to voltage/frequency ratio (2 or 5 points)  Switching frequency 4 kHz  Braking to standstill By DC injection  Maximum input current 2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current 1.9 kVA at 500 V (heavy duty)  Maximum input current 5 %  Maximum input current 5 %  Relavour output voltage 500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5060 Hz  Relavour output frequency 4 kHz  With safety function Safety 7 True  With safety function Safety 7 True	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, R2A, R2C on inductive load, cos phi = 0.4 and L/R = 7 mis: 2 A at 30 V DC Relay output R2A. R2C on resistive load, cos phi = 1: 5 A at 30 V DC 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  Asynchronous motor control profile Voltage/frequency ratio. 5 points Flux vector control without sensor, standard voltage/frequency ratio. Energy Saving, quadratic Urf Flux vector control without sensor - Energy Saving voltage/frequency ratio. Energy Saving, quadratic Urf Flux vector control without sensor Voltage/frequency ratio. 2 points Synchronous motor control profile Vector control without sensor Transient overtorque 170200 % of nominal motor torque Maximum output frequency 0.599 kHz  Acceleration and deceleration Linear U S CUS Ramp switching Acceleration 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  True  Line current 2.8 A at 380 V (heavy duty)  Maximum input current 2.8 A  Maximum output voltage 500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5060 Hz  Relative symmetric network requency bolerance Frospective line isc 5 kA  Base load current at high overload 4.1 A  Prover dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safety True	<b>G</b>	Relay output R1A, R1B, R1C, R2A, R2C on inductive load, cos phi = 0.4 and L/R = 7
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  Asynchronous motor control profile Voltage/frequency ratio, 5 points Flux vector control without sensor, standard Voltage/frequency ratio, 2 points  Synchronous motor control profile Vector control without sensor - Energy Saving Voltage/frequency ratio, 2 points  Synchronous motor control profile Transient overtorque 170200 % of nominal motor torque Maximum output frequency 0.599 kHz Acceleration and deceleration Tramps  Linear U S CUS Ramp switching Acceleration automatic stop with DC injection Acceleration/deceleration automatic stop with DC injection Acceleration/deceleration automatic stop with DC injection Acceleration/deceleration automatic stop with DC injection Motor slip compensation Automatic whatever the load Adjustable 0.300 % 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 2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current 2.8 A  Maximum output voltage 500 V  Apparent power 1.9 kWa at 500 V (heavy duty)  Network frequency 5060 Hz  Relative symmetric network frequency 15 kA  Base load current at high overfload 4.1 A  Overfload 4.1 A  Overfload 5 Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safety True		Relay output R1A, R1B, R1C, R2A, R2C on inductive load, cos phi = 0.4 and L/R = 7
Method of access  Slave CANopen  True  Asynchronous motor control profile  Asynchronous motor control profile  Asynchronous motor control profile  Synchronous motor control profile  Synchronous motor control profile  Synchronous motor control profile  Vector control without sensor standard Voltage/frequency ratio. 2 points  Synchronous motor control profile  Vector control without sensor  Transient overtorque  170200 % of nominal motor torque  Maximum output frequency  0.599 kHz  Acceleration and deceleration ramps  CUSS Ramp switching Acceleration ramp adaptation Acceleration/deceleration ramp adaptation Acceleration/deceleration ramp adaptation 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 adjustable 416 kHz with derating factor  Nominal switching frequency  4 kHz  Braking to standstill  By DC injection  Brake chopper integrated  True  Line current  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  560 Hz  Relative symmetric network frequency Frequency tolerance  Prospective line Isc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safety  True  With safety function Safety		
A quadrant operation possible Asynchronous motor control profile Asynchronous motor control profile Flux vector control without sensor, standard Voltage/frequency ratio, 2 points Flux vector control without sensor and the sensor standard Voltage/frequency ratio, 2 points  Synchronous motor control profile Vector control without sensor  Transient overtorque 170200 % of nominal motor torque Maximum output frequency 0.599 kHz  Acceleration and deceleration Linear U S CUS Ramp switching Acceleration ramp adaptation Acceleration/deceleration ramp adaptation Acceleration/deceleration/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 2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current 2.8 A at 380 V (heavy duty)  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5.060 Hz  Relative symmetric network frequence Prospective line Isc 5 kA  Base load current at high overload Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safety True	Minimum switching current	Relay output R1A, R1B, R1C, R2A, R2C: 5 mA at 24 V DC
Asynchronous motor control profile  Nottage/frequency ratio . 5 points Flux vector control without sensor . standard Voltage/frequency ratio . 2 prints Flux vector control without sensor . Standard Voltage/frequency ratio . 2 points  Synchronous motor control profile  Vector control without sensor  Transient overtorque  170 200 % of nominal motor torque  Maximum output frequency  0.599 kHz  Acceleration and deceleration Linear U S CUS Ramp switching Acceleration/deceleration ramp adaptation Acceleration/deceleration automatic stop with DC injection  Motor slip compensation  Automatic whatever the load Adjustable 0 300 % Not available in voltage/frequency ratio (2 or 5 points)  Switching frequency  2 16 kHz adjustable 4 16 kHz with derating factor  Nominal switching frequency  4 kHz  Braking to standstill  By DC injection  Brake chopper integrated  True  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty) Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5 %  Relative symmetric network  frequency bolerance  Prospective line Isc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safety  True	Method of access	Slave CANopen
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  Transient overtorque  170200 % of nominal motor torque  Maximum output frequency  0.599 kHz  Acceleration and deceleration Linear 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  1.16 kHz adjustable 416 kHz with derating factor  Nominal switching frequency  4 kHz  Braking to standstill  By DC injection  Brake chopper integrated  True  1.28 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty) 3.24 At 500 V (heavy duty) 4.25 At 500 V (heavy duty)  Neximum input current 2.8 A  Maximum output voltage 500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  560 Hz  Relative symmetric network requency frequency tolerance  Prospective line Isc 5 kA  Base load current at high overlass flexible in true  With safety function Safely  True	4 quadrant operation possible	True
Voltage/frequency ratio - Energy Saving, quadratic U/f Flux vector control without sensor - Energy Saving Voltage/frequency ratio - Z points  Synchronous motor control profile  Vector control without sensor - Energy Saving Voltage/frequency ratio - Z points  Synchronous motor control profile  Transient overtorque  170200 % of nominal motor torque  Maximum output frequency  0.599 kHz  Acceleration and deceleration Linear U S 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  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  560 Hz  Relative symmetric network frequency tolerance  Prospective line Isc  5 kA  Base load current at high over-diasipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True	•	
Fitx vector control without sensor - Energy Saving Voltage/frequency ratio, 2 points  Synchronous motor control profile Vector control without sensor  Transient overtorque 170200 % of nominal motor torque  Maximum output frequency 0.599 kHz  Acceleration and deceleration 2	profile	,
Synchronous motor control profile  Vector control without sensor  Transient overtorque  170200 % of nominal motor torque  0.599 kHz  Acceleration and deceleration ramps  Linear U S CUS Ramp switching 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  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency 5060 Hz  Relative symmetric network frequency 5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safety  True		
Transient overtorque 170200 % of nominal motor torque  Maximum output frequency 0.599 kHz  Acceleration and deceleration ramps U 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 2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  2.8 A d Sou V (heavy duty)  Maximum input current 2.8 A  Maximum output voltage 500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5060 Hz  Relative symmetric network frequency 5 kA  Base load current at high overload Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True		Voltage/frequency ratio, 2 points
Maximum output frequency  Acceleration and deceleration ramps  Linear 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  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency  5 %  Relative symmetric network frequency  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True  With safety function Safely  True	Synchronous motor control profile	Vector control without sensor
Acceleration and deceleration Tramps  Linear 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 2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current 2.8 A  Maximum output voltage 500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5060 Hz  Relative symmetric network frequency 5 %  Relative symmetric network frequency 5 kA  Base load current at high overload Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True	Transient overtorque	170200 % of nominal motor torque
Tamps  U S CUS Ramp switching Acceleration/deceleration ramp adaptation Acceleration/deceleration automatic stop with DC injection  Motor slip compensation 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 2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Asximum input current 2.8 A  Maximum output voltage  500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5060 Hz  Relative symmetric network frequency tolerance  Prospective line lsc 5 kA  Base load current at high overload  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True	Maximum output frequency	0.599 kHz
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  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5 %  Relative symmetric network frequency Frospective line Isc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True		
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  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency tolerance  Prospective line lsc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True	•	S
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  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency tolerance  Prospective line Isc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True		
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  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  2.8 A  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency tolerance  Prospective line Isc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True		Acceleration/deceleration ramp adaptation
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  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  8 A A  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency tolerance  Prospective line Isc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True		Acceleration/deceleration automatic stop with DC injection
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  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency tolerance  Prospective line lsc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True	Motor slip compensation	
416 kHz with derating factor  Nominal switching frequency 4 kHz  Braking to standstill By DC injection  Brake chopper integrated True  Line current 2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current 2.8 A  Maximum output voltage 500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5060 Hz  Relative symmetric network frequency tolerance  Prospective line Isc 5 kA  Base load current at high overload  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True		
Nominal switching frequency 4 kHz  Braking to standstill By DC injection  Brake chopper integrated True  Line current 2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current 2.8 A  Maximum output voltage 500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5060 Hz  Relative symmetric network frequency tolerance  Prospective line Isc 5 kA  Base load current at high overload  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True	Switching frequency	216 kHz adjustable
Braking to standstill  By DC injection  Brake chopper integrated  True  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency tolerance  Prospective line Isc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True		·
Brake chopper integrated  True  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency tolerance  Prospective line lsc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True	Nominal switching frequency	4 kHz
Line current  2.8 A at 380 V (heavy duty) 2.2 A at 500 V (heavy duty)  Maximum input current  2.8 A  Maximum output voltage  500 V  Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency tolerance  Prospective line Isc  5 kA  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True	Braking to standstill	By DC injection
2.2 A at 500 V (heavy duty)  Maximum input current 2.8 A  Maximum output voltage 500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5060 Hz  Relative symmetric network frequency tolerance Prospective line Isc 5 kA  Base load current at high overload  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True	Brake chopper integrated	True
Maximum output voltage 500 V  Apparent power 1.9 kVA at 500 V (heavy duty)  Network frequency 5060 Hz  Relative symmetric network frequency tolerance  Prospective line Isc 5 kA  Base load current at high overload  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True	Line current	` · · · · · · · · · · · · · · · · · · ·
Apparent power  1.9 kVA at 500 V (heavy duty)  Network frequency  5060 Hz  Relative symmetric network frequency tolerance  Prospective line Isc  5 %  Base load current at high overload  Power dissipation in W  Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely  True	Maximum input current	2.8 A
Network frequency 5060 Hz  Relative symmetric network frequency tolerance 5 %  Prospective line Isc 5 kA  Base load current at high overload 4.1 A  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True	Maximum output voltage	500 V
Relative symmetric network frequency tolerance 5 %  Prospective line Isc 5 kA  Base load current at high overload 4.1 A  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True	Apparent power	1.9 kVA at 500 V (heavy duty)
frequency tolerance  Prospective line Isc 5 kA  Base load current at high overload 4.1 A  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True	Network frequency	5060 Hz
Base load current at high overload  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True		5 %
overload  Power dissipation in W Fan: 27.0 W at 380 V, switching frequency 4 kHz  With safety function Safely True	Prospective line Isc	5 kA
With safety function Safely True		4.1 A
	Power dissipation in W	Fan: 27.0 W at 380 V, switching frequency 4 kHz
		True

With safety function Safe brake management (SBC/SBT)	False
With safety function Safe 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	True
off (STO)	
off (STO) With safety function Safely Limited Position (SLP)	False
With safety function Safely	False
With safety function Safely Limited Position (SLP)	
With safety function Safely Limited Position (SLP) With safety function Safe Direction (SDI)	Input phase breaks: drive Overcurrent between output phases and earth: drive Overheating protection: drive Short-circuit between motor phases: drive
With safety function Safely Limited Position (SLP) With safety function Safe Direction (SDI) Protection type	False  Input phase breaks: drive Overcurrent between output phases and earth: drive Overheating protection: drive Short-circuit between motor phases: drive Thermal protection: drive
With safety function Safely Limited Position (SLP) With safety function Safe 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  45.0 mm

## **Environment**

Operating position	Vertical +/- 10 degree
Product certifications	CE ATEX NOM GOST EAC RCM KC
marking	CE ATEX UL CSA EAC 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 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	9.4 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	8.500 cm
Package 1 Width	27.500 cm
Package 1 Length	32.500 cm
Package 1 Weight	2.335 kg
Unit Type of Package 2	P06
Number of Units in Package 2	24
Package 2 Height	75.000 cm
Package 2 Width	60.000 cm
Package 2 Length	80.000 cm
Package 2 Weight	69.808 kg



**Green Premium**<sup>TM</sup> **label** is Schneider Electric's commitment to delivering products with best-inclass environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO<sub>2</sub> products.

**Guide to assessing product sustainability** is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

Learn more about Green Premium >

Guide to assess a product's sustainability >





Transparency RoHS/REACh

## Resource performance



Upgraded Components Available

## Well-being performance



Mercury Free



Rohs Exemption Information

Yes

### **Certifications & Standards**

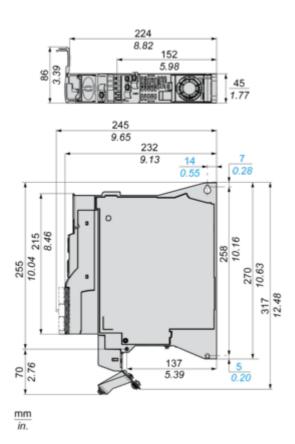
Reach Regulation	REACh Declaration
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)
China Rohs Regulation	China RoHS declaration
Environmental Disclosure	Product Environmental Profile
Weee	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
Circularity Profile	End of Life Information

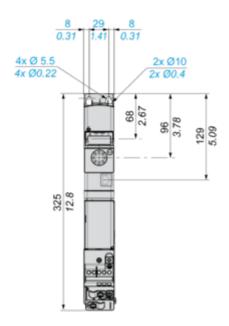
## **Dimensions Drawings**

#### **Dimensions**

## Bottom, Right and Front View

in.



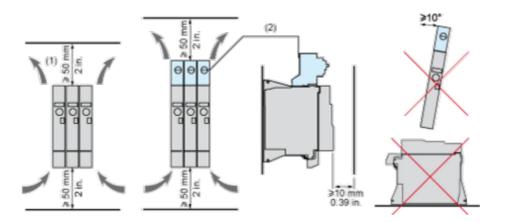


# Product datasheet ATV320U06N4B

## ATV320U06N4B

## Mounting and Clearance

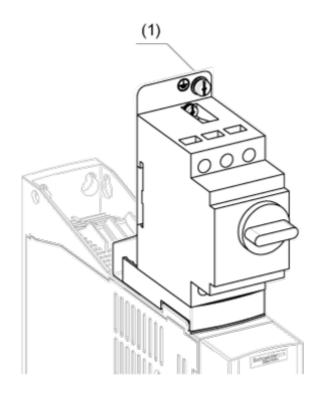
## **Mounting and Clearance**



- (1) Minimum value corresponding to thermal constraints. (2) Optional GV2 circuit-breaker

Option: Protection Device, GV2 circuit-breaker

**NOTE:** The product overall height dimension, including GV2 adapter and EMC plate mounted, becomes 424 mm (16.7 in.) instead of 325 mm (12.80 in.)



(1) Ground screw (HS type 2 - 5x12)

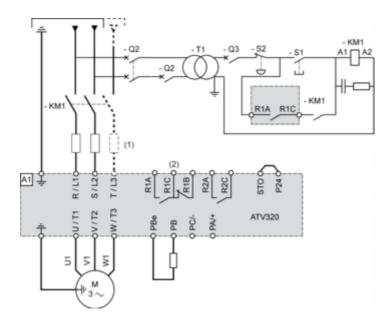
## ATV320U06N4B

Connections and Schema

#### **Connection Diagrams**

#### **Diagram with Line Contactor**

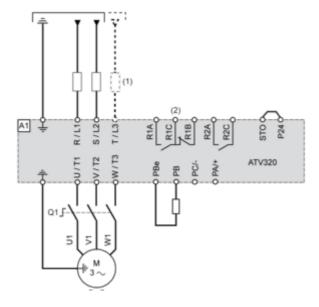
Connection diagrams conforming to standards ISO13849 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1.



- (1) Line choke (if used)
- (2) Fault relay contacts, for remote signaling of drive status

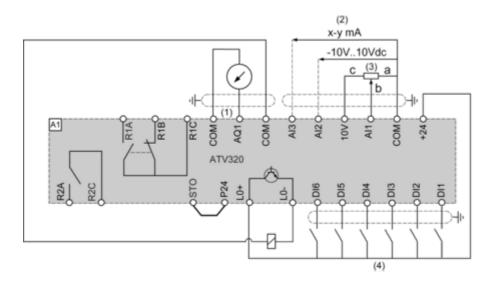
#### **Diagram with Switch Disconnect**

Connection diagrams conforming to standards EN 954-1 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1.



- (1) Line choke (if used)
- (2) Fault relay contacts, for remote signaling of drive status

## **Control Connection Diagram in Source Mode**



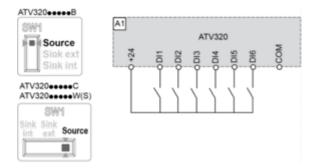
- (1) Analog output
- (2) Analog inputs
- (3) Reference potentiometer (10 kOhm maxi)
- (4) Digital inputs

### ATV320U06N4B

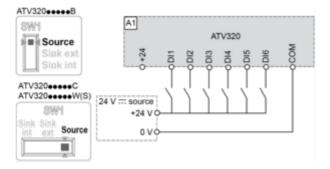
#### **Digital Inputs Wiring**

The logic input switch (SW1) is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

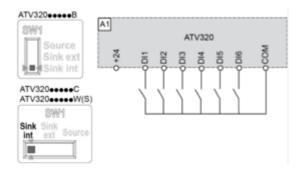
Switch SW1 set to "Source" position and use of the output power supply for the DIs.



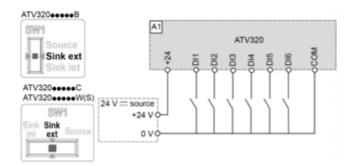
Switch SW1 set to "Source" position and use of an external power supply for the DIs.



Switch SW1 set to "Sink Int" position and use of the output power supply for the DIs.



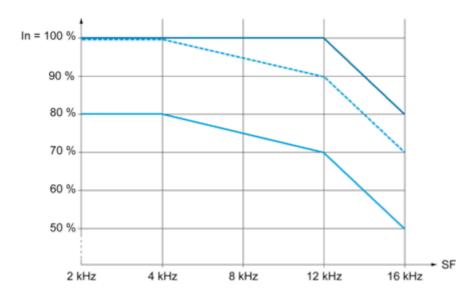
Switch SW1 set to "Sink Ext" position and use of an external power supply for the Dls.



#### Performance Curves

### **Derating Curves**

Derating curve for the nominal drive current (In) as a function of temperature and switching frequency (SF).



40 °C (104 °F) - Mounting type A, B and C 50 °C (122 °F) - Mounting type A, B and C 60 °C (140 °F) - Mounting type B and C

In: Nominal Drive Current SF: Switching Frequency