

Application segments	General
	Specific

Material handling, packaging, textiles, hoisting, mechanical actuators, material working
Conveyors, carton packers, gantry cranes, woodworking, metal processing, fans, etc.



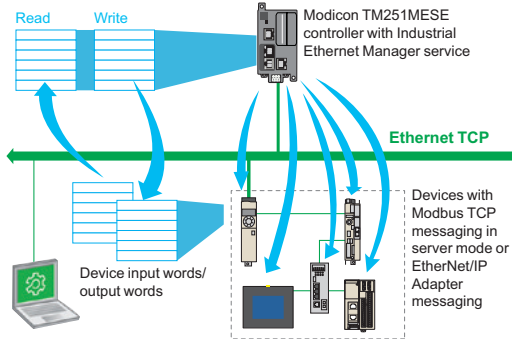
Degree of protection	
Power range for 50..60 Hz supply	Single-phase 200...240V Three-phase 200...240V Three-phase 380...500V Three-phase 525...600V
Drive	Output frequency Control type Asynchronous motor Synchronous motor Motor sensor Integrated as an option Overload torque performance
Functions	Advanced functions Integrated safety functions Number of preset speeds
Number of integrated I/O	Analog inputs Digital inputs Analog outputs Digital outputs Relay outputs Safety function inputs
Communication	Integrated Optional
Configuration and runtime tools	
Standards and certifications	
References	

IP20	IP20
0.18...2.2 kW/0.25... 3 HP	0.18...2.2 kW/0.25... 3 HP
0.18...15 kW/0.25...20 HP	-
0.37...15 kW/0.5...20 HP	0.37...15 kW/0.5...20 HP
0.75...15 kW/1...20 HP	-
0.1...599 Hz	-
U/F ratio (2 points, 5 points, energy saving, quadratic), Flux vector control without sensor (Standard and Energy saving)	
Vector control without sensor	
-	
RS422 (speed monitoring)	
Up to 200% Tn of over torque, and 170% tn of braking torque for open loop motor control	
<ul style="list-style-type: none"> Control of asynchronous and synchronous motors; including IE2, IE3 and PM motors in open loop MachineStruxure integration in SoMachine Operation in Velocity mode and Torque control (with current limitation) Customizable and flexible application functions with ATV Logic (up to 50 function blocks) Numerous application functions for targeted application segments Embedded safety functions dedicated to targeted application segments 	
STO (up to SIL3 / PLe), SS1, SLS, SMS, GDL	
16	
3: 1 Bipolar differential ±10 V, 1 with Voltage 0...10 V and 1 with current (0-20 mA)	
6: 4 configurable (positive or negative logic), 1 with PTC probe input, 1x20kHz pulse input	
1: Configurable as voltage (0...10 V) or current (0-20 mA)	
1: Configurable as sink or source	
2: 1 with NO/NC contacts and 1 with NO contacts	
1 + 4: 1 with STO and 4 configurable for safety functions from digital inputs	
Single port compatible with CANopen and Modbus Serial line	
Ethernet IP and Modbus TCP, CANopen RJ45 Daisy Chain, Sub-D, and screw terminals, PROFINET, Profibus DP V1, EtherCAT, DeviceNet and PowerLink	
Integrated Display, DTM (Device Type Manager), SoMove software, simple loader (optional), Multiloader(optional), and remote graphic terminal(optional).	
IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, category C2, C3), UL 508C, IEC 61800-5-2 up to SIL3 level, IEC 61508 up to SIL 3 level, IEC 13849-1 up to PLe level, IEC 60204-1, IEC 62061, EN 954-1 category 3, Draft standard EN 50495E, IEC 60721-3-3(Class 3C3,Class 3S2), EN/IEC 60068-2, IEC 60068-2-3, EN/IEC 61800-5-1, 86/188/EEC	
CE, ATEX, UL 508C, UL61800-5-1, CSA 22.2 N274, NOM, GOST, EAC, CTICK, RCM, KC, SIL	
ATV320●●●●●C	ATV320●●●●●B

Material handling, packaging, textiles, hoisting, mechanical actuators, material working
Conveyors, carton packers, gantry cranes, woodworking, metal processing, fans, etc.



IP66	IP65
0.18...2.2 kW/0.25... 3 HP	0.18...2.2 kW/0.25... 3 HP
-	
0.37...7.5 kW/0.5...10 HP	0.37...7.5 kW/0.5...10 HP
-	
0.1...599 Hz	
U/F ratio (2 points, 5 points, energy saving, quadratic), Flux vector control without sensor (Standard and Energy saving)	
Vector control without sensor	
-	
RS422 (speed monitoring)	
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1: Configurable as voltage (0...10 V) or current (0-20 mA)	
1: Configurable as sink or source	
2: 1 with NO/NC contacts and 1 with NO contacts	
1 + 4: 1 with STO and 4 configurable for safety functions from digital inputs	
Single port compatible with CANopen and Modbus Serial line	
Ethernet IP and Modbus TCP, CANopen RJ45 Daisy Chain, Sub-D, and screw terminals, PROFINET, Profibus DP V1, EtherCAT, DeviceNet, and PowerLink	
Integrated Display, DTM (Device Type Manager), SoMove software, simple loader (optional), Multiloader(optional), and remote graphic terminal(optional).	
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CE, ATEX, UL 508C, UL61800-5-1, CSA 22.2 N274, NOM, GOST, EAC, CTICK, RCM, KC, SIL	
ATV320●●●●●W	ATV320●●●●●WS



I/O Scanner (Industrial Ethernet Manager)

Advanced Variable Speed drive solution - Altivar 320

The Altivar Machine ATV320 provides IP20 and IP6x variable speed drive for three-phase synchronous and asynchronous motors in open loop control, and incorporates functions suitable for the most common applications, including:

- Torque and speed accuracy at very low speed, high dynamic performance with flux vector control without sensor.
- Extended frequency range for high-speed motors.
- Parallel connection of motors and special drives using voltage/frequency ratio.
- Static speed accuracy and energy saving for open-loop synchronous motors.

The Altivar Machine ATV320 series focus on easy integration for simple and advanced machine requirements with proven motor control and connectivity.

It offers enhanced automation capabilities and performance for industrial machine applications:

- Effective control of asynchronous and permanent magnet motors
- Complete integration into any system architecture (Ethernet, CANopen, Profibus, etc.)
- Compact and book format for integration in a variety of different cabinet types
- Integrated safety function for compliance with functional safety standards
- Enhanced resistance to polluted atmospheres

By taking account of constraints on product setup and use right from the design stage, Schneider Electric simplifies the integration of the Altivar Machine ATV320 drive into industrial machines. It features more than 150 functions. It is robust, easy to install, and compliant with the Machinery Directive 2006/42/EC.

ATV320 is fully integrated inside Schneider Electric's **EcoStruxure Machine** through DTM. PLCopen-compliant libraries. **EcoStruxure Machine** can be used to develop, configure, and set up an entire machine in a single software environment. Using FDT/DTM technology, it is possible to configure, control, and diagnose Altivar Machine ATV320 drives directly in SoMachine and SoMove software by means of the same software brick (DTM).

With seamless integration under this platform, Altivar Machine ATV320 benefits from the advantage of shorter engineering and design times. Optional Ethernet-based communication capability makes it accessible to production data at any level of automation system.

Applications

Altivar Machine ATV320 drives incorporate functions suitable for the most common applications, including:

Material handling

- Very quick response times on transmission of a command: 2 ms (± 0.5 ms)
- Reference via pulse input as analog input
- Control via built-in CANopen network or optional communication networks
- Position control via limit switches with time optimization at low speed
- Multiple parameter settings via parameter set switching
- Provide high protection version IP65/66 product, with/without vario switch

Hoisting

- Brake control adapted for horizontal and vertical movement
- Brake feedback management
- Load measurement using weight sensor
- High-speed hoisting with rope slack
- Limit switch management
- Dedicated speed monitoring function with optional card
- Multiple motors/configurations
- High speed switching function
- DC sharing and optional compact design regenerative braking unit



Material handling application



Hoisting application



Packing and packaging machines



Material working application



Textile application



Pumping

Applications (continued)

Packaging machines

- Up to 50 Hz of the bandwidth
- Control via built-in CANopen network or optional communication networks
- Book format enables to save space inside enclosure
- Advanced synchronous open loop control achieve energy saving performance
- Direct mounting of short circuit breaker on drive without wiring

Material working

- 5 integrated safety functions secure operation
- Control via built-in CANopen network or optional communication networks
- Fastest possible controlled stop on loss of line supply
- Motor thermal monitoring and protection function
- Torque limitation
- DC sharing and optional compact design regenerative braking unit(ATV regene)
- Very quick response times on transmission of a command: 2 ms (± 0.5 ms)
- 200% over torque ability, allow more dynamic response

Textile

- High protection degree version: IP65/IP66
- High resolution of the digital speed reference
- Use of synchronous motor, irrespective of load, helps to assure speed accuracy and energy saving
- High bandwidth with high-performance speed loop
- Spooling function/ Traverse control
- DC sharing and optional compact design regenerative braking unit
- Fastest possible controlled stop on loss of line supply secure continuous working machine
- Control via built-in CANopen network or optional communication networks
- Book format enables to save space inside enclosure

Pumping

- Dedicated motor control law for pumping and fan with optimized energy saving
- PID regulator with preset reference
- Multi motor parameter set
- ATV logic, programming function integrated in drive
- High protection degree enclosure
- Alarm management function
- Process load monitoring function
- Fault inhibition function, used in emergency situation such as smoke extraction.

General machine control

- ATV logic, programming function integrated in drive
- PID regulator
- 16 preset speed functions.
- Reference operation
- Line contactor and output contactor command
- Speed or torque control with current limitation
- Control via built-in CANopen network or optional communication networks
- DC bus management
- 6 motor control laws: Standard V/F, V/F 5 points, Sensorless vector control, Synchronous permanent magnet motors control, Variable torque, and Energy saving, allow user to adapt different machine behavior.

ATV320_63440_CPF16015C



ATV320_63440_CPF16031C



Presentation - ATV320 IP20 Product

The Altivar Machine ATV320 IP20 product is a variable speed drive for three-phase asynchronous and synchronous motors from 0.18 to 15 kW.

The Altivar Machine ATV320 drive is robust, simple to commission, and easy to integrate into different machine layouts and cabinets. It can also be integrated into commonly used automation architectures. Altivar Machine ATV320 variable speed drives are particularly suitable for applications involving simple industrial machines. Furthermore, Altivar Machine ATV320 embeds many practical functions so that advanced application requirements can be covered. Altivar Machine ATV320 is designed to improve machine performance and increase machine availability while reducing the total machine cost.

Flexible

There are 2 different formats for IP20 products, book and compact:

- The book format, 45 and 60 mm (1.77 and 2.63 in.) wide, is designed to be mounted side-by-side to save significant space on the installation foot print.
- The compact format, 72 to 180 mm (2.83 to 7.08 in.) wide, is designed to be integrated in compact electrical cabinets (200 mm (7.87 in.) cabinet depth or less) or mounted directly on the machine frame.

Advanced connectivity

Advanced connectivity allows the Altivar Machine ATV320 to operate in commonly used automation architectures; CANopen and Modbus RTU communication protocols are embedded and various communication fieldbus options are offered based on:

- Modbus TCP, EtherNet/IP, PROFINET, EtherCAT, POWERLINK
- Modbus serial link, CANopen, ProfibusDP, DeviceNet.

Robust design

Altivar Machine ATV320 variable speed drives can operate in harsh environment conditions:

- Up to 50 °C/122 °F without derating
- Up to 60 °C/140 °F with derating without the need for an additional fan

The printed circuit boards are coated according to IEC 60721-3-3 class 3C3 for industrial environments and 3S2 for solid particles.

Effective motor control

Control of both asynchronous and synchronous motors is both simple and effective. Altivar Machine ATV320 offers +/- 10% accuracy of motor slip in open-loop control with asynchronous motors.

Functions dedicated to synchronous motors

Altivar Machine ATV320 variable speed drives integrate new functions for synchronous motors that are suitable for the majority of commercially-available motors.

- Simplified setting due to the reduced number of configuration parameters (4 maximum)
- Autotuning of the drive/motor combination
- High-frequency injection for high performance in open-loop mode

As standard, Altivar Machine ATV320 drives support to drive synchronous motor in open loop control. This motor control law could help customer to reduce energy consumption.

Each ATV320 drive has a corresponding synchronous motor pre-selected in the SoMove software. User could select and order synchronous motor from the software easily and reduce time to design.

(1) The book format products are up to 4 kW and compatible supply voltages are 200-240V single phase and 380-500V three phase.



ATV320U02M2W



ATV320U02M2WS

Presentation - ATV320 IP66/65 Product

The Altivar Machine ATV320 IP66/65 drive is a variable speed drive for three-phase asynchronous and synchronous motors from 0.18 to 7.5kW. Altivar high IP offers **washable drives** for harsh environments, if users want to clean the dust & chemical pollution outside of drives. It meets EMC C2/C3 performance to suppress the emission effect on long cable application. ATV320 IP66/65 drive has **no external fan**, it reduces operational TOC site. ATV320 IP66/65 is heavy duty embedded from -10°C to 50°C for operational frequency (without derating below 4kHz switching frequency). **Integrated PLC and safety functions(SLS,SMS,SS1,GDL,STO)** save the automation setup cost of hybrid automation system which is widely applied in material handling segment. With flexibility and functionality, ATV320 IP66/65 is the only IP drives, that offers with **flexible panel building ability** to users.

Flexible

There are 2 different sizes for ATV320 IP66/65 products in W*H*D:

- Size 1: 250 mmx340 mmx182 mm (200 mm) (9.84 inx13.38 inx 7.16in) from 0.2kw to 4kW
- Size 2: 320 mm x 512 mm x 295 mm (335 mm) (12.59 inx 20.15inx 11.61in) from 5.5kw to 7.5kW

For higher IP protection offers enclosed with two types:

- IP66 drives without Vario disconnect switch
- IP65 drives with Vario disconnect switch

The IP66/65 drives provide higher environmental resistance, and open the possibility to design with the customized ground plate(VW3A9911 & VW3A9912) and front cover of the drive, also with 2 holes in the front reserved for integrating control and signaling units.

Altivar Machine ATV320 offers variety of supply possibilities:

- 200-240 V single phase: up to 2.2 kW
- 380-500 V three phase: up to 7.5kW

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- Modbus serial link, CANopen, ProfibusDP, DeviceNet.

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Effective motor control

Control of both asynchronous and synchronous motors is both simple and effective. Altivar Machine ATV320 offers +/- 10% accuracy of motor slip in open-loop control with asynchronous motors.

Features dedicated for material handling solution

Simplified setting due to the reduced number of configuration parameters (4 maximum)

- 16 preset speed functions
- Multiple parameter settings via parameter set switching
- External fan-less design, 50°C without derating below.
- 3 analogue inputs, VSD can act as signal monitors.
- DC injection for fast stop
- DC bus connection to safe energy
- Jog operation
- PID regulator
- Positioning by limit switches or sensors
- Parameter switching
- Automatic restart



ATV320 with customized design



(1) For more information, please refer to the XB* catalog on our website: www.schneider-electric.com.

Innovative functions (1)

PF600367



Example of an application (scrolling billboard) requiring a typical ATV Logic sequence

Application functions

Altivar Machine ATV320 variable speed drives feature 150 functions, including:

- Configurations: standard or customizable
- Application-specific functions for material handling, textiles, hoisting, mechanical actuators
- Adjustable switching frequency (adjusted motor current, reduced motor noise)
- Adjustable monitoring function to create "My Menu" function to obtain user-specific monitoring
- Ability to upload/download drive configurations with the power off

ATV Logic

ATV Logic is used to adapt Altivar Machine ATV320 variable speed drives to specific applications by means of customizable integrated control system functions.

The integrated control system functions featuring ATV Logic can be used to perform simple operations without adding further devices, which reduces costs.

ATV Logic is programmed via the SoMove configuration software (refer to the SoMove catalog available on our website www.schneider-electric.com) and provides access to the following functions:

- Arithmetical operations, Boolean operators, counters, timers, etc.
- Programming of up to 50 functions by an automated sequence
- Access to the drive's internal variables
- Use internal function block such as timer, counter, and logic unit to achieve customized & advanced function as user wants.

Compatibility mode

ATV320 has a dedicate function of compatibility mode which enables customer to replace a legacy product ATV32 without changing PLC program. Machine builders will benefit for their maintenance and service request from their end users, regardless of the type of the network fieldbus connected. This function will reduced the down-time of machines and improved its productivity.

Safety functions

The Altivar Machine ATV320 range of variable speed drives provides integrated safety functions (according to standard IEC 61508) comparable with performance level "e" (PL e) according to standard ISO/EN 13849-1-2.

The Altivar Machine ATV320 drive software includes 5 safety functions that help machines meet safety requirements, whether or not they are used in conjunction with a Preventa safety module (2):

- STO: Safe Torque Off
- SLS: Safely Limited Speed
- SS1: Safe Stop 1
- SMS: Safe Maximum Speed
- GDL: Guard Door Locking

These safety functions are configured using SoMove configuration software.

For more information, please refer to the SoMove catalog available on our website www.schneider-electric.com.

Note: To set up the safety functions, please refer to the "Altivar Machine ATV320 Safety Functions Manual" available on our website www.schneider-electric.com.

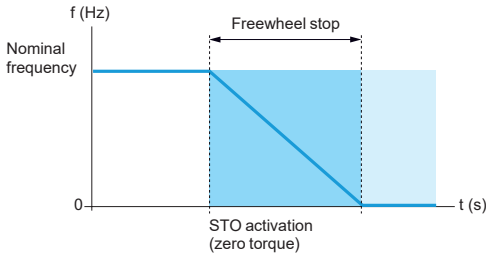
(1) Non-exhaustive list; please consult our website www.schneider-electric.com.

(2) Please refer to our web site <http://www.schneider-electric.com/machinesafety>

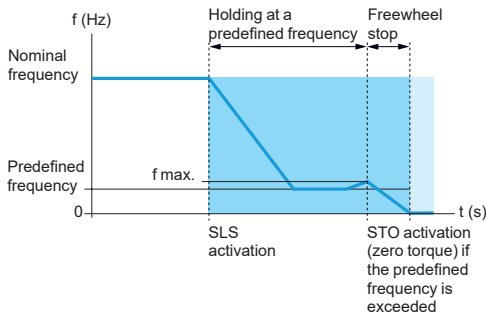
PF600366



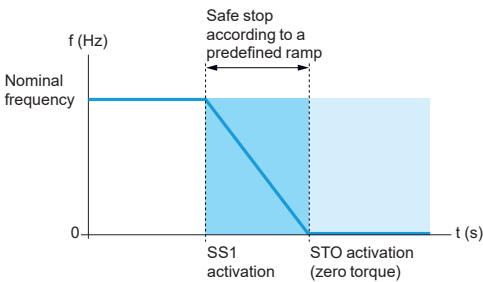
Example of an application requiring the use of safety functions



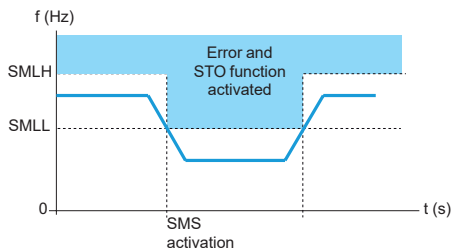
Activation of the STO safety function



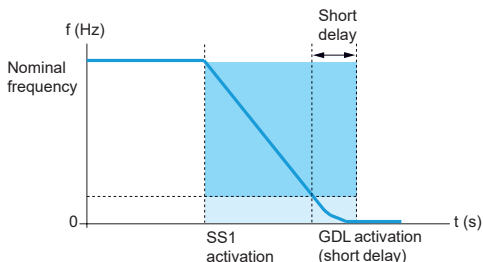
Activation of the SLS safety function



Activation of the SS1 safety function



Activation of the SMS safety function



Activation of the GDL safety function (example of stop type SS1)

Integrated safety functions (1)

Safe Torque Off (STO) safety function

This function brings the machine safely into a no-torque state and/or prevents it from starting accidentally.

Safely Limited Speed (SLS) safety function

The SLS integrated safety function can be initiated by activation of safety function inputs. This function prevents the motor from exceeding the specified speed limit. If the motor speed exceeds the specified speed limit value, safety function STO is triggered.

Safe Stop 1 (SS1) safety function

The SS1 integrated safety function causes a category 1 safe stop. This function monitors the deceleration according to a dedicated deceleration ramp and safely shuts off the torque once standstill has been achieved.

Safe Maximum Speed (SMS) safety function

This function prevents the speed of the motor from exceeding the predefined speed limit.

- 2 different speed limits can be defined and can be selected by logic inputs.
- If the motor speed exceeds the predefined speed limit value, safety function STO is triggered.

Once the SMS function is configured, it is continuously active.

Guard Door Locking (GDL) safety function

This function allows you to release the guard door lock after specified delay when the motor power is turned off. The specified delay is chosen according to the type of stop.

The front door of the machine can be opened only after the motor is stopped; this function helps to ensure the safety of the machine operator.

Setting up the integrated safety functions

Setting up the integrated safety functions in the Altivar Machine ATV320 drive does not require any options or additional accessories.

The functions are connected directly to the drive's digital inputs and can only be configured using SoMove setup software.

For more information, please refer to the SoMove catalog available on our website www.schneider-electric.com.

(1) Please refer to the "Altivar Machine ATV320 Safety Functions Manual" available on our website www.schneider-electric.com.



ATV320U02M2C...U07M2C



ATV320U11M2C...U22M2C
ATV320U04N4C...U15N4C



ATV320U02M2B...U07M2B
ATV320U04N4B...U15N4B



ATV320U11M2B...U22M2B
ATV320U22N4B...U40N4B



ATV320U07N4W...U40N4W
ATV320U07N4WS...U40N4WS



ATV320U55N4W...U75N4W
ATV320U55N4WS...U75N4WS



CANopen communication module
with RJ45 connectors



CANopen communication module
with SUB-D connector



CANopen communication module
with connection via terminals

The offer

The Altivar Machine ATV320 range of variable speed drives covers motor power ratings from 0.18 kW/0.25 HP to 15 kW/20 HP with 4 types of power supply in book and compact control block design:

- 200 V...240 V single-phase, 0.18 kW/0.25 HP to 2.2 kW/3 HP (ATV320U●●M2B, ATV320U●●M2C, ATV320U●●M2W, ATV320U●●M2WS)
- 200 V...240 V three-phase, 0.18 kW/0.25 HP to 15 kW/20 HP (ATV320●●●M3C)
- 380 V...500 V three-phase, 0.37 kW/0.50 HP to 15 kW/20 HP (ATV320U●●N4C, ATV320●●●N4B)
- 380 V...500 V three-phase, 0.37 kW/0.50 HP to 7.5 kW/10 HP (ATV320●●●N4W, ATV320●●●N4WS)
- 525 V...600 V three-phase, 0.75 kW/1 HP to 15 kW/20 HP (ATV320●●●S6C)

References suffix meaning:

- Ending with "B" indicate that the product has a book control block
- Ending with "C" indicate that the product has a compact control block and a compact format (1)
- Ending with "W" indicate the IP66 drives without Vario Switch.
- Ending with "WS" indicate IP65 drives with Vario Switch.

Altivar Machine ATV320 drives integrate the Modbus and CANopen communication protocols as standard. Both can be accessed via the RJ45 connector on the front of the drive. To simplify connection of the Altivar Machine ATV320 drive to the CANopen machine bus, 3 dedicated communication modules are available with different connectors:

- CANopen Daisy Chain module with 2 RJ45 connectors
- CANopen module with 9-way SUB-D connector
- CANopen module with 5-way terminal block

In addition to the Modbus and CANopen standard protocols, Altivar Machine ATV320 drives can be connected to the main industrial communication buses and networks by adding one of the following optional communication modules:

- Modbus/TCP - Ethernet/IP
- PROFIBUS DP V1
- DeviceNet
- EtherCAT
- POWERLINK
- PROFINET

Integrated EMC filters

Altivar 320, have built-in EMC filter in ATV320U●●M2B, ATV320U●●M2C, ATV320●●●N4B, ATV320●●●N4C and ATV320●●●W● drives to meet the EMC standard.

Drive	Maximum length of shielded cable (2)/(3) according to	
	IEC/EN 61800-3 Category C2	IEC/EN 61800-3 Category C3
ATV320●●●M2●	10	10
ATV320U04N4C...U15N4C	10	10
ATV320U22N4C...U40N4C	10	20
ATV320U04N4B...U15N4B	5	5
ATV320U22N4B...U40N4B	10	20
ATV320U55N4●...U75N4●	2	20
ATV320D11N4●...D15N4●	–	30
ATV320U02M2W●...U22M2W●	10	10
ATV320U04N4W●...U75N4W●	10	10

The EMC filter enables compliance with standard IEC/EN 61800-3, category C2 or C3 in environment 1 or 2 and to comply with the European Electromagnetic Compatibility Directive (EMC).

(1) For the book format, several drives can be mounted side-by-side to save space.

(2) If motors are connected in parallel, it is the total cable length that should be taken into account.

(3) The maximum motor cable lengths is at 4 kHz switching frequency.

EMC standard description				
IEC 61800-3 Category	C1	C2	C3	C4
Environment	1st environment	1st or 2nd environment (choice of the user)	2nd environment	2nd environment
Supply voltage/current	< 1000 V	–	–	> 1000 V, or > 400 A or IT supply network
Knowledge and requirement	No requirements	Installation and commissioning by EMC expert only	EMC plan required	–

The EMC filter enables compliance with standard IEC/EN 61800-3, category C2 or C3 in environment 1 or 2 and to comply with the European Electromagnetic Compatibility Directive (EMC).

EMC standards		
Category	Subcategory	Test standard
Emission	Radiated noise	CISPR11 (EN55011)
	Conducted noise	CISPR11 (EN55011)
Immunity	Electrostatic Discharge (ESD) test	IEC61000-4-2
	Radioactive radio-frequency magnetic contactor field	IEC61000-4-3
	Electrical fast transient (EFT)/burst transients test	IEC61000-4-4
	Electrical Surge Test	IEC61000-4-5
	Immunity to conducted disturbances induced by radio-frequency fields	IEC61000-4-6
	Voltage dip/interruption of power	IEC61000-4-11

IEC 60068-2	
Description	Test and endurance standards
Temperature test	IEC 60068-2-2
Vibration test	IEC 60068-2-6
Schock test	IEC 60068-2-27
Shake test	IEC 60068-2-29

The offer (continued)

Accessories and external options

Accessories and external options are available with Altivar Machine ATV320 drives. The type of external accessories and options depends on the drive rating.

Accessories

- UL Type 1 conformity kits, plates for direct mounting on 35 mm/1.38 in. rails, etc.
- Bracket for direct mounting of GV2/ATV320U●●●●B circuit breaker
- Adapter for mounting the control module at 90°, for mounting the power module on its side, keeping the control module visible and accessible
- Daisy chain DC bus cordsets for daisy chain connection of the DC bus

External options

- Braking resistors
- Line chokes
- Motor chokes
- Additional EMC filters
- Adapter extension module for compact control block drive
- Speed monitoring module

Dialog and configuration tools

Human-Machine interface

The 4-digit display **1** shows drive states, error codes, and parameter values. The navigation button **2** is used to navigate through the menus, modify values, and change the motor speed in local mode.

HMI terminals

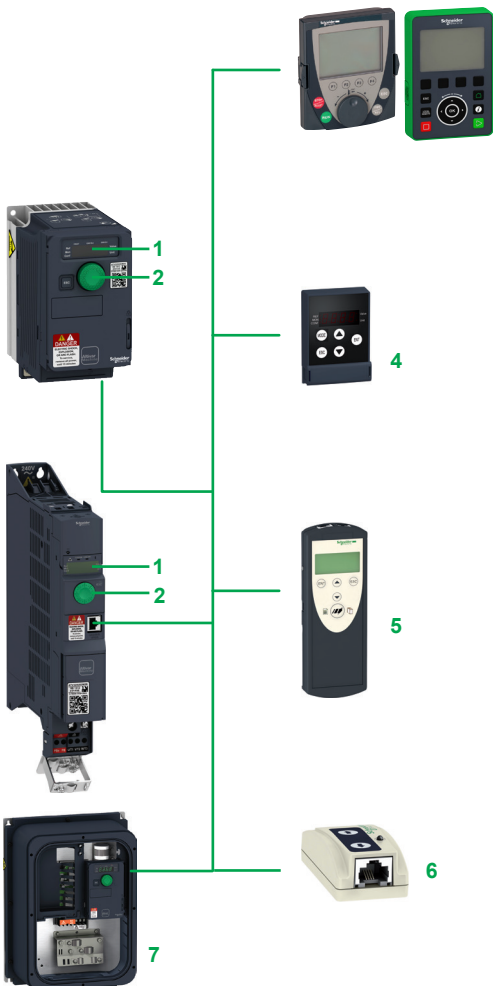
Altivar Machine ATV320 drives can be connected to a graphic display terminal (VW3A1111, VW3A1101) **3** or a remote display terminal **4**, which are available as options. The HMI terminals can be mounted on an enclosure door with IP65 degree of protection. They provide the same level of access as the on-board Human-Machine interface. The HMI terminal display in the majority of user languages, and provide a user-friendly environment for configuration, debugging or maintenance.

SoMove setup software

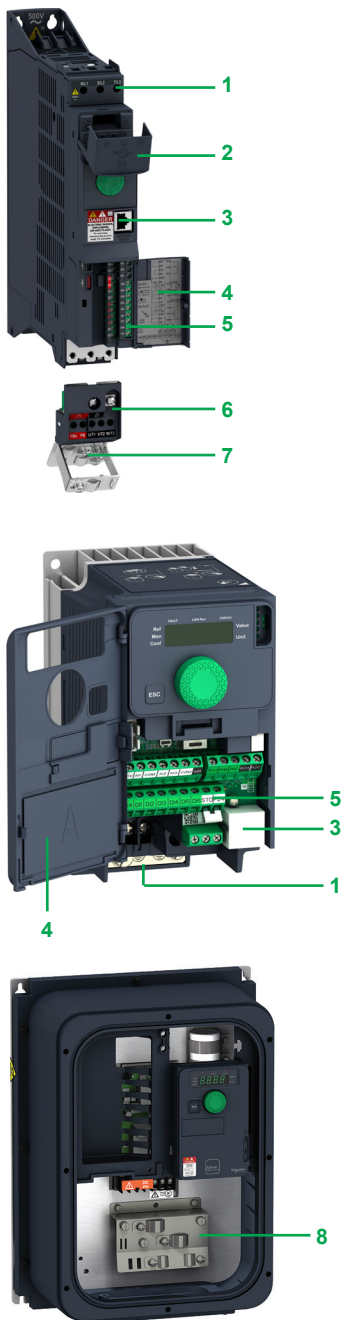
SoMove setup software is used to configure, adjust, debug (using the Oscilloscope function), and maintain Altivar Machine ATV320 drives in the same way as for other Schneider Electric drives and starters. For more information, please refer to the SoMove catalog available on our website www.schneider-electric.com.

Simple Loader and Multi-Loader configuration tools

The Simple Loader tool **6** enables the configuration from one powered-up drive to be duplicated on another powered-up drive. The Multi-Loader tool **5** enables configurations from a PC or drive to be copied and duplicated on another drive; the drives do not need to be powered up. **7** Direct cable connection doesn't affect Certification & Protection degree (IP level). Green bar: Advanced configuration tool. The advanced keypad tool **5** enables configurations from a PC or drive to be copied and duplicated on another drive, also support for REMOTE/LOCAL operation. See [page 19](#).



ATV320 dialog and configuration tools



Description

- 1 Power terminals
 - 2 Protective cover to block access to the power terminals 1 when closed
 - 3 RJ45 communication port for access to integrated protocols: Modbus serial link and CANopen machine bus
 - 4 Protective cover for access to the control terminals (also includes a label with a wiring diagram)
 - 5 Control terminals for I/O connection:
 - 6 digital inputs:
 - 4 configurable for positive digital input (Sink) or negative digital input (Source)
 - 1 input configurable as a PTC probe input
 - 1 x 20 kHz pulse control input, 24 V $\overline{\text{---}}$, impedance 3.5 k Ω , sampling time 8 ms
 - 1 digital output:
 - 24 V $\overline{\text{---}}$, sampling time 2 ms, maximum voltage 30 V, maximum current 100 mA
 - 3 analog inputs:
 - 1 current analog input, by programming X and Y from 0 to 20 mA, impedance 250 Ω
 - 1 bipolar differential analog input ± 10 V, impedance 30 k Ω
 - 1 voltage analog input 0...10 V $\overline{\text{---}}$, impedance 30 k Ω , sampling time 2 ms
 - 1 analog output configurable as:
 - voltage analog output 0...10 V $\overline{\text{---}}$, minimum load impedance 470 Ω
 - current analog output 0...20 mA, maximum load impedance 800 Ω
 - 2 relay outputs:
 - 1 NC contact and 1 NO contact with common point
- Minimum switching capacity 5 mA for 24 V $\overline{\text{---}}$, maximum switching capacity 3 A on resistive load, 2 A on inductive load for 250 V \sim or 30 V $\overline{\text{---}}$
- 1 NO contact, maximum switching capacity 5 A on resistive load
 - 6 Removable motor power terminal block (allows quick disconnect and re-connect of motor cables during maintenance operations)
 - 7 EMC mounting plate (integral part of the motor power terminal block 6). This plate is supplied with a cable guide support, which can be used if required.
 - 8 Direct cable connection doesn't affect Certification & Protection degree (IP level).

Standards and certifications (1)

Altivar Machine ATV320 drives have been developed to conform to the strictest international standards and recommendations relating to industrial electrical control devices (IEC), in particular:

- IEC 61800-5-1
- IEC 61800-3:
 - EMC immunity: IEC 61800-3, Environments 1 and 2
 - Conducted emission compliance:
 - IEC 61800-3, category C2, C3 with integrated EMC filter for ATV320●M2●, ATV320●N4W●, ATV320U04N4●●●●D15N4● drives
 - IEC 61800-3, category C1, C2, C3 with additional EMC filter for ATV320●N4●, ATV320●M2● drives
- ISO/EN 13849-1/-2 category 3 (PL d)
- IEC 61508 (parts 1 & 2)
- IEC 60721-3-3 classes 3C3 and 3S2

Altivar Machine ATV320 drives are certified:

- CE - LV EMC
- CE - Machine
- ATEX
- UL 508C
- UL61800-5-1
- CSA 22.2 N274
- NOM
- GOST
- EAC
- CTICK
- RCM
- KC
- SIL

They are CE marked according to the European low voltage (2014/35/UE) and EMC (2014/30/UE) directives.

They also comply with environmental directives (RoHS).

(1) A complete list of certifications and characteristics is available on our website www.schneider-electric.com.

Variable speed drives

Altivar Machine ATV320

Drives with compact control block, IP20



ATV320U02M2C...U07M2C



ATV320U11M2C...U22M2C
ATV320U04N4C...U15N4C



ATV320U22N4C...
ATV320U40N4C



ATV320U55M3C

Drives with compact control block											
Motor Power indicated on rating plate (1)	Line supply				Altivar Machine ATV320					Reference (1)	Weight
	Max. line current (2) (3)	Apparent power		Max. prospective line Isc (4)	Max. continuous output current (In) (1)	Max. transient current for 60s	Power dissipated at maximum output current (In) (1)				
	at U1	at U2	at U2		A	A	W			kg/lb	
Single-phase supply voltage: 200...240 V 50/60 Hz, with integrated EMC filter (6)											
0.18	0.25	3.4	2.8	0.7	1	1.5	2.3	17	ATV320U02M2C	0.800/1.278	
0.37	0.5	5.9	4.9	1.2	1	3.3	5	30	ATV320U04M2C	1.000/2.204	
0.55	0.75	7.8	6.6	1.6	1	3.7	5.6	33	ATV320U06M2C	1.100/2.425	
0.75	1	10.0	8.4	2	1	4.8	7.2	45	ATV320U07M2C		
1.1	1.5	13.7	11.5	2.8	1	6.9	10.4	61	ATV320U11M2C	1.600/3.527	
1.5	2	17.8	14.9	3.6	1	8	12	76	ATV320U15M2C		
2.2	3	24.0	20.2	4.8	1	11	16.5	99	ATV320U22M2C		
Three-phase supply voltage: 200...240 V 50/60 Hz, without integrated EMC filter											
0.18	0.25	2.0	1.7	0.7	5	1.5	2.3	15	ATV320U02M3C	0.800/1.278	
0.37	0.5	3.6	3.0	1.2	5	3.3	5	27	ATV320U04M3C	0.900/1.984	
0.55	0.75	4.9	4.2	1.7	5	3.7	5.6	31	ATV320U06M3C	1.000/2.204	
0.75	1.0	6.3	5.3	2.2	5	4.8	7.2	42	ATV320U07M3C		
1.1	1.5	8.6	7.2	3.0	5	6.9	10.4	58	ATV320U11M3C	1.400/3.086	
1.5	2.0	11.1	9.3	3.9	5	8	12	72	ATV320U15M3C		
2.2	3.0	14.9	12.5	5.2	5	11	16.5	91	ATV320U22M3C		
3.0	3.0	18.7	15.7	6.5	5	13.7	20.6	105	ATV320U30M3C	2.200/4.850	
4.0	5.0	23.8	19.9	8.3	5	17.5	26.3	140	ATV320U40M3C		
5.5	7.5	35.4	29.8	12.4	22	27.5	41.3	242	ATV320U55M3C	3.500/7.716	
7.5	10.0	45.3	38.2	15.9	22	33	49.5	293	ATV320U75M3C	3.600/7.937	
11.0	15.0	60.9	51.4	21.4	22	54	81	468	ATV320D11M3C	6.800/14.991	
15.0	20.0	79.7	67.1	27.9	22	66	99	551	ATV320D15M3C	6.900/15.212	

(1) These values are given for a nominal switching frequency of 4 kHz, for use in continuous operation. The switching frequency is adjustable from 2 to 16 kHz. Above 4 kHz, derate the nominal drive current. The nominal motor current should not exceed this value (see derating curves).

(2) Typical value for a 4-pole motor and a maximum switching frequency of 4 kHz, with no line choke for max.

(3) Nominal supply voltage, min. U1, max. U2: 200 (U1)...240 V (U2), 380 (U1)...500 V (U2), 525(U1)...600(U2).

(4) If line Isc is greater than the values in the table, add line chokes.

Variable speed drives

Altivar Machine ATV320

Drives with compact control block, IP20



ATV320U07S6C



ATV320U15S6C



ATV320U55N4C

Drives with compact control block

Motor		Line supply				Altivar Machine ATV320				Reference (1)	Weight
Power indicated on rating plate (1)	Max. line current (2) (3)	Apparent power		Max. prospective line Isc (4)	Max. continuous output current (In) (1)	Max. transient current for 60s	Power dissipated at maximum output current (In) (1)				
		at U1	at U2					at U2	A	A	W
kW	HP	A	A	kVA	kA	A	A	W		kg/lb	
Three-phase supply voltage: 380...500 V 50/60 Hz, with integrated EMC filter (5) (6)											
0.37	0.5	2.1	1.6	1.4	5	1.5	2.25	23	ATV320U04N4C	1.200/2.866	
0.55	0.75	2.8	2.2	1.9	5	1.9	2.85	27	ATV320U06N4C	2.646	
0.75	1	3.6	2.8	2.4	5	2.3	3.45	32	ATV320U07N4C		
1.1	1.5	5	3.8	3.3	5	3	4.5	40	ATV320U11N4C	1.300/2.866	
1.5	2	6.4	4.9	4.2	5	4.1	6.15	56	ATV320U15N4C		
2.2	3	8.7	6.6	5.7	5	5.5	8.25	74	ATV320U22N4C	2.100/4.630	
3	3	11.1	8.4	7.3	5	7.1	10.65	93	ATV320U30N4C		
4	5	13.7	10.6	9.2	5	9.5	14.25	111	ATV320U40N4C	2.200/4.850	
5.5	7.5	20.7	14.5	12.6	22	14.3	21.45	195	ATV320U55N4C	2.200/4.850	
7.5	10.0	26.5	18.7	16.2	22	17.0	25.5	229	ATV320U75N4C	2.200/4.850	
11.0	15.0	36.6	25.6	22.2	22	27.7	41.6	370	ATV320D11N4C	6.800/14.991	
15.0	20.0	47.3	33.3	28.8	22	33.0	49.5	452	ATV320D15N4C	6.900/15.211	
Three-phase supply voltage: 525...600 V 50/60 Hz, without integrated EMC filter (7)											
0.75	1	1.5	1.4	1.5	5	1.7	2.6	34	ATV320U07S6C	1.300/2.866	
1.5	2	2.6	2.4	2.5	5	2.7	4.1	54	ATV320U15S6C		
2.2	3	3.7	3.2	3.4	5	3.9	5.9	77	ATV320U22S6C	2.000/4.409	
4	5	6.5	5.8	6.0	5	6.1	9.2	96	ATV320U40S6C	2.500/5.511	
5.5	7.5	8.4	7.5	7.8	22	9.0	13.5	148	ATV320U55S6C	3.500/7.716	
7.5	10	11.6	10.5	10.9	22	11.0	16.5	175	ATV320U75S6C		
11	15	15.8	14.1	14.7	22	17.0	25.5	267	ATV320D11S6C	6.500/14.330	
15	20	22.1	20.1	20.9	22	22.0	33.0	317	ATV320D15S6C		

(1) These values are given for a nominal switching frequency of 4 kHz, for use in continuous operation. The switching frequency is adjustable from 2 to 16 kHz. Above 4 kHz, derate the nominal drive current. The nominal motor current should not exceed this value (see derating curves).

(2) Typical value for a 4-pole motor and a maximum switching frequency of 4 kHz, with no line choke for max.

(3) Nominal supply voltage, min. U1, max. U2: 200 (U1)...240 V (U2), 380 (U1)...500 V (U2), 525 (U1)...600 (U2).

(4) If line Isc is greater than the values in the table, add line chokes.

(5) Drives supplied with category C2 integrated EMC filter. This filter can be disconnected.

(6) Drives are supplied with an EMC plate, for assembly by the customer.

(7) A line choke is mandatory with ATV320●●●S6C drives. To be ordered separately, see page 40.

Variable speed drives

Altivar Machine ATV320

Drives with book control block, IP20



ATV320U02M2B...U07M2B
ATV320U04N4B...U15N4B



ATV320U11M2B...U22M2B
ATV320U22N4B...U40N4B



ATV320U55N4B



ATV320D15N4B

Drives with book control block											
Motor		Line supply				Altivar Machine ATV320				Reference (1)	Weight
Power indicated on rating plate (1)	kW	HP	Max. line current (2),(3)		Apparent power kVA	Max. prospective line Isc (4)	Max. continuous output current (In) (1)	Max. transient current for 60s	Power dissipated at maximum output current (In) (1)		
			at U1	at U2						at U2	A
Single-phase supply voltage: 200...240 V 50/60 Hz, with integrated EMC filter (5) (6)											
0.18	0.25		3.4	2.8	0.7	1	1.5	2.3	19	ATV320U02M2B	2.400/ 5.291
0.37	0.5		6	5	1.2	1	3.3	5	31	ATV320U04M2B	2.500/ 5.511
0.55	0.75		7.9	6.7	1.6	1	3.7	5.6	35	ATV320U06M2B	
0.75	1		10.1	8.5	2	1	4.8	7.2	46	ATV320U07M2B	2.400/ 5.291
1.1	1.5		13.6	11.5	2.8	1	6.9	10.4	62	ATV320U11M2B	2.900/ 6.393
1.5	2		17.6	14.8	3.6	1	8	12	77	ATV320U15M2B	
2.2	3		23.9	20.1	4.8	1	11	16.5	98	ATV320U22M2B	
Three-phase supply voltage: 380...500 V 50/60 Hz, with integrated EMC filter (5) (6)											
0.37	0.5		2.1	1.6	1.4	5	1.5	2.3	23	ATV320U04N4B	2.500/ 5.511
0.55	0.75		2.8	2.2	1.9	5	1.9	2.9	27	ATV320U06N4B	2.600/ 5.732
0.75	1		3.6	2.7	2.3	5	2.3	3.5	31	ATV320U07N4B	
1.1	1.5		5	3.8	3.3	5	3	4.5	41	ATV320U11N4B	2.500/ 5.511
1.5	2		6.5	4.9	4.2	5	4.1	6.2	56	ATV320U15N4B	
2.2	3		8.7	6.6	5.7	5	5.5	8.3	74	ATV320U22N4B	3.000/ 6.614
3	3		11.1	8.4	7.3	5	7.1	10.7	93	ATV320U30N4B	
4	5		13.7	10.5	9.1	5	9.5	14.3	111	ATV320U40N4B	
5.5	7.5		20.7	14.5	12.6	22	14.3	21.45	195	ATV320U55N4B	7.500/ 16.534
7.5	10		26.5	18.7	16.2	22	17	25.5	229	ATV320U75N4B	
11	15		36.6	25.6	22.2	22	27.7	41.6	370	ATV320D11N4B	8.700/ 19.180
15	20		47.3	33.3	28.8	22	33	49.5	452	ATV320D15N4B	8.800/ 19.401

(1) These values are given for a nominal switching frequency of 4 kHz, for use in continuous operation. The switching frequency is adjustable from 2 to 16 kHz. Above 4 kHz, derate the nominal drive current. The nominal motor current should not exceed this value (see derating curves).

(2) Typical value for a 4-pole motor and a maximum switching frequency of 4 kHz, with no line choke for max. prospective line Isc (4).

(3) Nominal supply voltage, min. U1, max. U2: 200 (U1)...240 V (U2), 380 (U1)...500 V (U2), 525 (U1)...600 V (U2).

(4) If line Isc is greater than the values in the table, add line chokes.

(5) Drives supplied with category C2 integrated EMC filter. This filter can be disconnected.

(6) Connection in compliance with EMC standards:

- ATV320●●●M2B, ATV320U04N4B...ATV320U40N4B drives are supplied with an EMC plate. This is integral part of the power terminal; these 2 components cannot be separated.

- ATV320U55N4B...D15N4B drives are supplied with an EMC plate, for assembly by the customer.

Variable speed drives

Altivar Machine ATV320

IP66 drive without Vario and IP65 drive with Vario

ATV320_63440_CPMGU18024



ATV320U02M2W
...U40N4W

ATV320_63440_CPMGU17055B



ATV320U55N4W,
ATV320U75N4W

ATV320_63440_CPMGU17058C



ATV320U02M2WS
...U40N4WS

ATV320_63440_CPMGU17060B



ATV320U55N4WS,
ATV320U75N4WS

Drives for harsh environment IP66/IP65										
Motor		Line supply				Altivar Machine ATV320				
Power indicated on rating plate (1)	Max. line current (2) (3)	Apparent power		Max. prospective line Isc (4)	Max. continuous output current (In) (1)	Max. transient current for 60s	Power dissipated at maximum output current (In) (1)	Reference (1)	Weight	
		at U1	at U2							at U2
kW	HP	A	A	kVA	kA	A	A	W	kg/lb	
Single-phase supply voltage: 200...240 V 50/60 Hz, with integrated EMC filter, IP66 (5)										
0.18	0.25	3.4	2.8	0.7	1	1.5	2.3	17	ATV320U02M2W	5.000/11.023
0.37	0.5	5.9	4.9	1.2	1	3.3	5	30	ATV320U04M2W	5.100/11.243
0.55	0.75	7.8	6.6	1.6	1	3.7	5.6	33	ATV320U06M2W	
0.75	1	10	8.4	2	1	4.8	7.2	45	ATV320U07M2W	
1.1	1.5	13.7	11.5	2.8	1	6.9	10.4	61	ATV320U11M2W	7.400/16.314
1.5	2	17.8	14.9	3.6	1	8	12	76	ATV320U15M2W	
2.2	3	24	20.2	4.8	1	11	16.5	99	ATV320U22M2W	
Three-phase supply voltage: 380...500 V 50/60 Hz, with integrated EMC filter, IP66 (5)										
0.37	0.5	2.1	1.6	1.4	5	1.5	2.3	23	ATV320U04N4W	5.900/13.007
0.55	0.75	2.8	2.2	1.9	5	1.9	2.9	27	ATV320U06N4W	
0.75	1	3.6	2.8	2.4	5	2.3	3.5	32	ATV320U07N4W	
1.1	1.5	5	3.8	3.3	5	3	4.5	40	ATV320U11N4W	6.000/13.227
1.5	2	6.4	4.9	4.2	5	4.1	6.2	56	ATV320U15N4W	
2.2	3	8.7	6.6	5.7	5	5.5	8.3	74	ATV320U22N4W	7.700/16.975
3	3	11.1	8.4	7.3	5	7.1	10.7	93	ATV320U30N4W	
4	5	13.7	10.6	9.2	5	9.5	14.3	111	ATV320U40N4W	7.800/17.196
5.5	7.5	20.7	14.5	12.6	22	14.3	21.5	195	ATV320U55N4W	22.000/48.501
7.5	10	26.5	18.7	16.2	22	17.0	25.5	229	ATV320U75N4W	
Single-phase supply voltage: 200...240 V 50/60 Hz, with integrated EMC filter, IP65, with vario (5)										
0.18	0.25	3.4	2.8	0.7	1	1.5	2.3	17	ATV320U02M2WS	5.400/11.904
0.37	0.5	5.9	4.9	1.2	1	3.3	5	30	ATV320U04M2WS	5.500/12.125
0.55	0.75	7.8	6.6	1.6	1	3.7	5.6	33	ATV320U06M2WS	5.500/12.125
0.75	1	10.0	8.4	2.0	1	4.8	7.2	45	ATV320U07M2WS	
1.1	1.5	13.7	11.5	2.8	1	6.9	10.4	61	ATV320U11M2WS	7.800/17.196
1.5	2	17.8	14.9	3.6	1	8	12	76	ATV320U15M2WS	
2.2	3	24.0	20.2	4.8	1	11	16.5	99	ATV320U22M2WS	
Three-phase supply voltage: 380...500 V 50/60 Hz, with integrated EMC filter, IP65, with vario (5)										
0.37	0.5	2.1	1.6	1.4	5	1.5	2.3	23	ATV320U04N4WS	6.300/13.889
0.55	0.75	2.8	2.2	1.9	5	1.9	2.9	27	ATV320U06N4WS	
0.75	1	3.6	2.8	2.4	5	2.3	3.5	32	ATV320U07N4WS	
1.1	1.5	5.0	3.8	3.3	5	3	4.5	40	ATV320U11N4WS	6.400/14.109
1.5	2.0	6.4	4.9	4.2	5	4.1	6.2	56	ATV320U15N4WS	
2.2	3.0	8.7	6.6	5.7	5	5.5	8.3	74	ATV320U22N4WS	8.100/17.857
3.0	3.0	11.1	8.4	7.3	5	7.1	10.7	93	ATV320U30N4WS	
4.0	5.0	13.7	10.6	9.2	5	9.5	14.3	111	ATV320U40N4WS	8.200/18.077
5.5	7.5	20.7	14.5	12.6	22	14.3	21.5	195	ATV320U55N4WS	22.700/50.044
7.5	10.0	26.5	18.7	16.2	22	17.0	25.5	229	ATV320U75N4WS	

(1) These values are given for a nominal switching frequency of 4 kHz, for use in continuous operation. The switching frequency is adjustable from 2 to 16 kHz. Above 4 kHz, derate the nominal drive current. The nominal motor current should not exceed this value (see derating curves).
 (2) Typical value for a 4-pole motor and a maximum switching frequency of 4 kHz, with no line choke for max. prospective line Isc (4).
 (3) Nominal supply voltage, min. U1, max. U2: 200 (U1)...240 V (U2), 380 (U1)...500 V (U2).
 (4) If line Isc is greater than the values in the table, add line chokes.
 (5) Drives supplied with category C2 integrated EMC filter. This filter can be disconnected.