

# ATV320U15M2C

variable speed drive ATV320 - 1.5kW -  
200...240V - 1 phase - compact

Product availability : Stock - Normally stocked in distribution facility



## Main

|                                    |  |
|------------------------------------|--|
| Range of product                   | Altivar Machine ATV320   |
| Product or component type          | Variable speed drive   |
| Product specific application       | Complex machines   |
| Device short name                  | ATV320   |
| Format of the drive                | Compact  |
| Product destination                | Asynchronous motors<br>Synchronous motors  |
| EMC filter                         | Class C2 EMC filter integrated   |
| IP degree of protection            | IP20 conforming to EN/IEC 61800-5-1  |
| Degree of protection               | UL type 1 with UL type 1 conformity kit  |
| Type of cooling                    | Fan  |
| Phase                              | 1 phase  |
| [Us] rated supply voltage          | 200...240 V (- 15...10 %)  |
| Supply frequency                   | 50...60 Hz (- 5...5 %)   |
| Motor power kW                     | 1.5 kW heavy duty  |
| Motor power hp                     | 2 hp heavy duty  |
| Line current                       | 17.6 A at 200 V heavy duty<br>14.8 A at 240 V heavy duty   |
| Prospective line I <sub>sc</sub>   | <= 1 kA  |
| Apparent power                     | 3.6 kVA at 240 V heavy duty  |
| Continuous output current          | 8 A at 4 kHz heavy duty  |
| Maximum transient current          | 12 A during 60 s heavy duty  |
| Asynchronous motor control profile | Voltage/Frequency ratio, 2 points<br>Voltage/Frequency ratio, 5 points<br>Flux vector control without sensor, standard<br>Voltage/Frequency ratio - Energy Saving, quadratic U/f<br>Flux vector control without sensor - Energy Saving |
| Synchronous motor control profile  | Vector control without sensor  |
| Speed drive output frequency       | 0.1...599 Hz   |

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

|                             |   |
|-----------------------------|---|
| Nominal switching frequency | 4 kHz   |
| Switching frequency         | 4...16 kHz with current derating<br>2...16 kHz adjustable   |
| Safety function             | STO (safe torque off) SIL 3<br>SS1 (safe stop 1)<br>SMS (safe maximum speed)<br>SLS (safe limited speed)<br>GDL (guard door locking)  |
| Communication port protocol | CANopen<br>Modbus   |
| Option card                 | Communication module: CANopen daisy chain RJ45<br>Communication module: CANopen SUB-D 9<br>Communication module: CANopen open style terminal block<br>Communication module: EtherCAT RJ45<br>Communication module: DeviceNet<br>Communication module: Ethernet/IP<br>Communication module: Profibus DP V1<br>Communication module: Profinet<br>Communication module: Ethernet Powerlink |

## Complementary

|                                     |  |
|-------------------------------------|--|
| Output voltage                      | $\leq$ power supply voltage  |
| Permissible temporary current boost | 1.5 x $I_n$ during 60 s heavy duty   |
| Speed range                         | 1...100 with asynchronous motor in open-loop mode  |
| Speed accuracy                      | +/- 10 % of nominal slip 0.2 $T_n$ to $T_n$  |
| Torque accuracy                     | +/- 15 %   |
| Transient overtorque                | 170...200 % of nominal motor torque  |
| Braking torque                      | $\leq$ 170 % with braking resistor during 60 s   |
| Regulation loop                     | Adjustable PID regulator   |
| Motor slip compensation             | Automatic whatever the load<br>Not available in voltage/frequency ratio (2 or 5 points)<br>Adjustable 0...300 %  |
| Acceleration and deceleration ramps | S<br>U<br>CUS<br>Deceleration ramp automatic stop DC injection<br>Deceleration ramp adaptation<br>Linear<br>Ramp switching   |
| Braking to standstill               | By DC injection  |
| Protection type                     | Drive: thermal protection<br>Drive: overcurrent between output phases and earth<br>Drive: input phase breaks<br>Drive: overheating protection<br>Drive: short-circuit between motor phases                                 |
| Frequency resolution                | Display unit: 0.1 Hz<br>Analog input: 0.012/50 Hz  |
| Electrical connection               | Control, screw terminal: 0.5...1.5 mm <sup>2</sup> AWG 20...AWG 16<br>Motor/Braking resistor, screw terminal: 4...6 mm <sup>2</sup> AWG 12...AWG 10<br>Power supply, screw terminal: 4...6 mm <sup>2</sup> AWG 12...AWG 10 |
| Connector type                      | 1 RJ45 Modbus/CANopen on control terminal  |
| Physical interface                  | 2-wire RS 485 Modbus   |
| Transmission frame                  | RTU Modbus   |
| Transmission rate                   | 4.8, 9.6, 19.2, 38.4 kbit/s Modbus<br>50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps CANopen  |
| Data format                         | 8 bits, configurable odd, even or no parity Modbus   |
| Type of polarization                | No impedance Modbus  |
| Number of addresses                 | 1...247 Modbus<br>1...127 CANopen  |
| Method of access                    | Slave CANopen  |
| Supply                              | Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC (+/- 5 %) current $\leq$ 10 mA (overload and short-circuit protection)   |

|                                    |   |
|------------------------------------|---|
| Local signalling                   | 1 LED green CANopen run<br>1 LED red CANopen error<br>1 LED red drive fault   |
| Width                              | 4.13 in (105 mm)  |
| Height                             | 142 mm<br>188 mm with EMC plate   |
| Depth                              | 6.22 in (158 mm)  |
| Product weight                     | 3.53 lb(US) (1.6 kg)  |
| Analogue input number              | 3   |
| Analogue input type                | Voltage (AI1): 0...10 V DC, impedance 30000 Ohm, resolution 10 bits<br>Bipolar differential voltage (AI2): +/- 10 V DC, impedance 30000 Ohm, resolution 10 bits<br>Current (AI3): 0...20 mA (or 4-20 mA, x-20 mA, 20-x mA or other patterns by configuration), impedance 250 Ohm, resolution 10 bits  |
| Discrete input number              | 7   |
| Discrete input type                | Programmable (sink/source) (DI1...DI4): 24...30 V DC: level 1 PLC<br>Programmable as pulse input 20 kpps (DI5): 24...30 V DC: level 1 PLC<br>Switch-configurable PTC probe (DI6): 24...30 V DC<br>Safe torque off (STO): 24...30 V DC, impedance 1500 Ohm   |
| Discrete input logic               | Negative logic (sink): : DI1...DI6, > 19 V (state 0) < 13 V (state 1)<br>Positive logic (source): : DI1...DI6, < 5 V (state 0) > 11 V (state 1)   |
| Analogue output number             | 1   |
| Analogue output type               | Software-configurable current (AQ1): 0...20 mA, impedance 800 Ohm, resolution 10 bits<br>Software-configurable voltage (AQ1): 0...10 V, impedance 470 Ohm, resolution 10 bits   |
| Sampling duration                  | Analog input (AI1, AI2, AI3): 2 ms<br>Analog output (AQ1): 2 ms   |
| Accuracy                           | Analog input AI1, AI2, AI3: +/- 0.2 % for a temperature of -10...60 °C<br>Analog input AI1, AI2, AI3: +/- 0.5 % for a temperature of 25 °C<br>Analog output AQ1: +/- 1 % for a temperature of 25 °C<br>Analog output AQ1: +/- 2 % for a temperature of -10...60 °C  |
| Linearity error                    | Analog input (AI1, AI2, AI3): +/- 0.2...0.5 % of maximum value<br>Analog output (AQ1): +/- 0.3 %  |
| Discrete output number             | 3   |
| Discrete output type               | Configurable relay logic NO/NC (R1A, R1B, R1C): electrical durability 100000 cycles<br>Configurable relay logic NO (R2A, R2B): electrical durability 100000 cycles<br>Logic (LO)  |
| Refresh time                       | Logic input (DI1...DI6): 8 ms (+/- 0.7 ms)<br>Relay output (R1A, R1B, R1C): 2 ms<br>Relay output (R2A, R2C): 2 ms   |
| Minimum switching current          | Relay output (R1, R2): 5 mA at 24 V DC  |
| Maximum switching current          | Relay output (R1) on resistive load (cos phi = 1): 3 A at 250 V AC<br>Relay output (R1) on resistive load (cos phi = 1): 4 A at 30 V DC<br>Relay output (R1, R2) on inductive load (cos phi = 0.4): 2 A at 250 V AC<br>Relay output (R1, R2) on inductive load (cos phi = 0.4): 2 A at 30 V DC<br>Relay output (R2) on resistive load (cos phi = 1): 5 A at 250 V AC<br>Relay output (R2) on resistive load (cos phi = 1): 5 A at 30 V DC   |
| Specific application               | Machinery   |
| Discrete and process manufacturing | Hoisting self erecting<br>Material handling carousel<br>Material handling conveyor<br>Material handling lifting platform<br>Material handling palletizers - medium performance<br>Material handling transfer table<br>Material handling turn table<br>Material working (wood, ceramic, stone, pvc, metal) cutting - medium accuracy<br>Material working (wood, ceramic, stone, pvc, metal) drilling<br>Material working (wood, ceramic, stone, pvc, metal) saw<br>Packaging bagging<br>Packaging feed conveyor low performance<br>Packaging filling bottles - intermittent operation<br>Packaging linear labeling<br>Packaging other application<br>Packaging stretching wrapping<br>Packaging tray take<br>Textile knitting<br>Textile printing machines<br>Textile spinning<br>Washing machines car |

Washing machines other application  
Hoisting standard crane - travelling or trolley

|                    |                                |
|--------------------|--------------------------------|
| Power range        | 1.1...2 kW 200...240 V 1 phase |
| Motor starter type | Variable speed drive           |

## Environment

|                                       |   |
|---------------------------------------|---|
| Isolation                             | Between power and control terminals   |
| Insulation resistance                 | > 1 mOhm at 500 V DC for 1 minute to earth  |
| Noise level                           | 48 dB conforming to 86/188/EEC  |
| Power dissipation in W                | 82.4 W (fan) at 200 V, 4 kHz  |
| Volume of cooling air                 | 4226.83 Gal/hr(US) (16 m <sup>3</sup> /h)   |
| Operating position                    | Vertical +/- 10 degree  |
| Electromagnetic compatibility         | Conducted radio-frequency immunity test conforming to IEC 61000-4-6 level 3<br>Electrical fast transient/burst immunity test conforming to IEC 61000-4-4 level 4<br>Electrostatic discharge immunity test conforming to IEC 61000-4-2 level 3<br>Radiated radio-frequency electromagnetic field immunity test conforming to IEC 61000-4-3 level 3<br>Voltage dips and interruptions immunity test conforming to IEC 61000-4-11<br>1.2/50 µs - 8/20 µs surge immunity test conforming to IEC 61000-4-5 level 3 |
| Pollution degree                      | 2 conforming to EN/IEC 61800-5-1  |
| Vibration resistance                  | 1.5 mm peak to peak (f = 2...13 Hz) conforming to EN/IEC 60068-2-6<br>1 gn (f = 13...200 Hz) conforming to EN/IEC 60068-2-6   |
| Shock resistance                      | 15 gn during 11 ms conforming to EN/IEC 60068-2-27  |
| Relative humidity                     | 5...95 % without condensation conforming to IEC 60068-2-3<br>5...95 % without dripping water conforming to IEC 60068-2-3  |
| Ambient air temperature for operation | 14...122 °F (-10...50 °C) without derating<br>122...140 °F (50...60 °C) with derating factor  |
| Ambient air temperature for storage   | -13...158 °F (-25...70 °C)  |
| Operating altitude                    | <= 3280.84 ft (1000 m) without derating<br>3280.84...9842.52 ft (1000...3000 m) with current derating 1 % per 100 m   |
| Standards                             | EN/IEC 61800-3<br>EN/IEC 61800-3 environment 1 category C2<br>EN/IEC 61800-5-1<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1   |
| Product certifications                | CSA<br>NOM 117<br>UL<br>RCM<br>EAC  |
| Marking                               | CE  |

## Ordering and shipping details

|                       |                                       |
|-----------------------|---------------------------------------|
| Category              | 22152 - ATV312 / ATV32 (.25 - 7.5 HP) |
| Discount Schedule     | CP4B                                  |
| GTIN                  | 00785901504504                        |
| Nbr. of units in pkg. | 1                                     |
| Package weight(Lbs)   | 4.1799999999999997                    |
| Returnability         | Y                                     |
| Country of origin     | ID                                    |

## Offer Sustainability

|                          |   |
|--------------------------|---|
| Sustainable offer status | Green Premium product   |
| RoHS (date code: YYWW)   | Compliant - since 1610 - Schneider Electric declaration of conformity<br><a href="#">Schneider Electric declaration of conformity</a> |
| REACH                    | Reference not containing SVHC above the threshold<br><a href="#">Reference not containing SVHC above the threshold</a>                |

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| Product environmental profile    | Available |
| Product end of life instructions | Available |

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