## Product data sheet

Specifications
variable speed drive ATV31 -

0.18kW - 240V 3-phase supply IP20

ATV31H018M3XAT
(!) Discontinued on: Dec 31, 2011
(!) End-of-service on: Dec 31, 2015

Main

| Range Of Product | Altivar |
| :---: | :---: |
| Product Or Component Type | Variable speed drive |
| Product Specific Application | Simple machine Wire guiding |
| Component Name | ATV31 |
| Assembly Style | With heat sink |
| Variant | With drive order potentiometer |
| Emc Filter | Without EMC filter |
| [Us] Rated Supply Voltage | 200... 240 V-5... 5 \% |
| Supply Frequency | $50 \ldots 60 \mathrm{~Hz}-5 . .5$ \% |
| Network Number Of Phases | 3 phases |
| Motor Power Kw | 0.18 kW 4 kHz |
| Motor Power Hp | 0.25 hp 4 kHz |
| Line Current | $\begin{aligned} & 1.9 \mathrm{~A} \text { at } 240 \mathrm{~V} \\ & 2.1 \mathrm{~A} \text { at } 200 \mathrm{~V} \text {, } \mathrm{sc}=1 \mathrm{kA} \end{aligned}$ |
| Apparent Power | 0.7 kVA |
| Prospective Line Isc | 1 kA |
| Nominal Output Current | 1.5 A 4 kHz |
| Maximum Transient Current | 2.3 A for 60 s |
| Power Dissipation In W | 23 W at nominal load |
| Asynchronous Motor Control Profile | Factory set : constant torque <br> Sensorless flux vector control with PWM type motor control signal |
| Analogue Input Number | 4 |

Complementary

| Product Destination | Asynchronous motors |
| :--- | :--- |
| Supply Voltage Limits | $170 \ldots . .264 \mathrm{~V}$ |
| Network Frequency | $47.5 \ldots 63 \mathrm{~Hz}$ |
| Output Frequency | $0.0005 \ldots 0.5 \mathrm{kHz}$ |
| Nominal Switching Frequency | 4 kHz |
| Switching Frequency | $2 \ldots . .16 \mathrm{kHz}$ adjustable |


| Speed Range | 1... 50 |
| :---: | :---: |
| Transient Overtorque | 150... $170 \%$ of nominal motor torque |
| Braking Torque | <= $150 \%$ during 60 s with braking resistor 100 \% with braking resistor continuously $150 \%$ without braking resistor |
| Regulation Loop | Frequency PI regulator |
| Motor Slip Compensation | Suppressable <br> Adjustable <br> Automatic whatever the load |
| Output Voltage | <= power supply voltage |
| Electrical Connection | Al1, Al2, Al3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal $2.5 \mathrm{~mm}^{2}$ AWG 14 <br> L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal $2.5 \mathrm{~mm}^{2}$ AWG 14 |
| Tightening Torque | Al1, Al2, Al3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6: 0.6 N.m L1, L2, L3, U, V, W, PA, PB, PA/+, PC/-: 0.8 N.m |
| Insulation | Electrical between power and control |
| Supply | Internal supply for logic inputs: $19 \ldots 30 \vee 100 \mathrm{~mA}$, protection type: overload and short-circuit protection <br> Internal supply for reference potentiometer ( 2.2 to 10 kOhm ): 10... 10.8 V 10 mA , protection type: overload and short-circuit protection |
| Analogue Input Type | Al3 configurable current $0 \ldots 20 \mathrm{~mA}$, impedance: 250 Ohm <br> Al1 configurable voltage $0 . . .10 \mathrm{~V}$, input voltage 30 V max, impedance: 30000 Ohm Al2 configurable voltage $+/-10 \mathrm{~V}$, input voltage 30 V max, impedance: 30000 Ohm AIP potentiometer reference 8 ms 10 bits $+/-4.3 \%+/-0.2 \%$ |
| Sampling Duration | LI1...LI6: 4 ms discrete <br> Al1, Al2, Al3: 8 ms analog |
| Response Time | AOV, AOC 8 ms for analog <br> R1A, R1B, R1C, R2A, R2B 8 ms for discrete |
| Linearity Error | +/- 0.2 \% for output |
| Analogue Output Number | 2 |
| Analogue Output Type | AOC configurable current: $0 \ldots . .20 \mathrm{~mA}$, impedance: 800 Ohm, resolution: 8 bits AOV configurable voltage: $0 . .10 \mathrm{~V}$, impedance: 470 Ohm, resolution: 8 bits |
| Discrete Input Logic | $\begin{aligned} & \text { Positive logic (source) (LI1 ...LI6), < } 5 \mathrm{~V} \text { (state } 0),>11 \mathrm{~V} \text { (state } 1) \\ & \text { Logic input not wired (LII ...LI4), < } 13 \mathrm{~V} \text { (state 1) } \\ & \text { Negative logic (source) (LI1...LI6), }>19 \mathrm{~V} \text { (state } 0) \end{aligned}$ |
| Discrete Output Number | 2 |
| Discrete Output Type | Configurable relay logic: (R1A, R1B, R1C) 1 NO + 1 NC -100000 cycles Configurable relay logic: (R2A, R2B) NC - 100000 cycles |
| Minimum Switching Current | R1-R2 10 mA at 5 V DC |
| Maximum Switching Current | R1-R2: 2 A at 250 VAC inductive load, cos $\mathrm{phi}=0.4$ and $\mathrm{L} / \mathrm{R}=7 \mathrm{~ms}$ $R 1-R 2: 2 A$ at $30 \mathrm{~V} D$ inductive load, cos phi $=0.4$ and $L / R=7 \mathrm{~ms}$ R1-R2: 5 A at $250 \mathrm{~V} A C$ resistive load, $\cos p h i=1$ and $L / R=0 \mathrm{~ms}$ R1-R2: 5 A at $30 \mathrm{~V} D C$ resistive load, $\cos \mathrm{phi}=1$ and $\mathrm{L} / \mathrm{R}=0 \mathrm{~ms}$ |
| Discrete Input Number | 6 |
| Discrete Input Type | (LI1...LI6) programmable at $24 \mathrm{~V}, 0 \ldots 100 \mathrm{~mA}$ for PLC, impedance: 3500 Ohm |
| Acceleration And Deceleration Ramps | S, U or customized Linear adjustable separately from 0.1 to 999.9 s |
| Braking To Standstill | By DC injection |


| Protection Type | Input phase breaks: drive <br> Line supply overvoltage and undervoltage safety circuits: drive <br> Line supply phase loss safety function, for three phases supply: drive <br> Motor phase breaks: drive <br> Overcurrent between output phases and earth (on power up only): drive <br> Overheating protection: drive <br> Short-circuit between motor phases: drive <br> Thermal protection: motor |
| :--- | :--- |
| Insulation Resistance | $>=500$ mohm 500 V DC for 1 minute |
| Display Type | 1 LED (red) for drive voltage <br> Four 7-segment display units for CANopen bus status |
| Time Constant | 5 ms for reference change |
| Frequency Resolution | Display unit: 0.1 Hz <br> Analog input: $0.1 . .100$ Hz |
| Connector Type | 1 RJ45 for CANopen via VW3 CANTAP2 adaptor |
| Physical Interface | RS485 multidrop serial link for CANopen via VW3 CANTAP2 adaptor <br> RS485 multidrop serial link for Modbus |
| Transmission Frame | RTU for CANopen via VW3 CANTAP2 adaptor <br> RTU for Modbus |
| Transmission Rate | $10,20,50,125,250,500$ kbps or 1 Mbps for CANopen via VW3 CANTAP2 adaptor |
| Number Of Addresses | 4800,9600 or 19200 bps for Modbus |

Environment

| Dielectric Strength | 2040 V DC between earth and power terminals 2880 V AC between control and power terminals |
| :---: | :---: |
| Electromagnetic Compatibility | $1.2 / 50 \mu \mathrm{~s}-8 / 20 \mu \mathrm{~s}$ surge immunity test level 3 conforming to IEC 61000-4-5 <br> Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 <br> Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2 <br> Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 |
| Standards | EN 50178 |
| Product Certifications | C-Tick <br> N998 <br> CSA <br> UL |
| Ip Degree Of Protection | On upper part: IP20 (without cover plate) <br> On connection terminals: IP21 <br> On upper part: IP31 <br> On upper part: IP41 |
| Pollution Degree | 2 |
| Protective Treatment | TC |
| Vibration Resistance | $1 \mathrm{gn}(\mathrm{f}=13 . . .150 \mathrm{~Hz}$ ) conforming to EN/IEC 60068-2-6 1.5 mm ( $\mathrm{f}=3 . . .13 \mathrm{~Hz}$ ) conforming to EN/IEC 60068-2-6 |
| Shock Resistance | 15 gn for 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 $-25 \ldots 70^{\circ} \mathrm{C}$
Storage

| Ambient Air Temperature For <br> Operation | $-10 \ldots 50^{\circ} \mathrm{C}$ without derating (with protective cover on top of the drive) |
| :--- | :--- |
| $-10 \ldots 60^{\circ} \mathrm{C}$ with derating factor (without protective cover on top of the drive) |  |

Operating Altitude
<= 1000 m without derating
$>=1000 \mathrm{~m}$ with current derating $1 \%$ per 100 m
Contractual warranty
Warranty
18 months

