

# ATV71HD30N4Z

variable speed drive ATV71 - 30kW-40HP - 480V  
- EMC filter-w/o graphic terminal



## Commercial status

Discontinued: 01 January 2018

End-of-service: 01 January 2026

has not been replaced. Please contact your customer care center for more information.

⚠ To be discontinued

## Main

|                                    |                                                                                                                                                                                                                               |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Range of product                   | Altivar 71                                                                                                                                                                                                                    |
| Product or component type          | Variable speed drive                                                                                                                                                                                                          |
| Product specific application       | Complex, high-power machines                                                                                                                                                                                                  |
| Component name                     | ATV71                                                                                                                                                                                                                         |
| Motor power kW                     | 30 kW, 3 phases at 380...480 V                                                                                                                                                                                                |
| Motor power hp                     | 40 hp, 3 phases at 380...480 V                                                                                                                                                                                                |
| Maximum motor cable length         | 100 m shielded cable<br>200 m unshielded cable                                                                                                                                                                                |
| Power supply voltage               | 380...480 V - 15...10 %                                                                                                                                                                                                       |
| Network number of phases           | 3 phases                                                                                                                                                                                                                      |
| Line current                       | 56 A for 480 V 3 phases 30 kW / 40 hp<br>66 A for 380 V 3 phases 30 kW / 40 hp                                                                                                                                                |
| EMC filter                         | Integrated                                                                                                                                                                                                                    |
| Assembly style                     | With heat sink                                                                                                                                                                                                                |
| Variant                            | Without remote graphic terminal                                                                                                                                                                                               |
| Apparent power                     | 43.4 kVA at 380 V 3 phases 30 kW / 40 hp                                                                                                                                                                                      |
| Prospective line I <sub>sc</sub>   | 22 kA for 3 phases                                                                                                                                                                                                            |
| Nominal output current             | 52 A at 4 kHz 460 V 3 phases 30 kW / 40 hp<br>66 A at 4 kHz 380 V 3 phases 30 kW / 40 hp                                                                                                                                      |
| Maximum transient current          | 109 A for 2 s 3 phases 30 kW / 40 hp<br>99 A for 60 s 3 phases 30 kW / 40 hp                                                                                                                                                  |
| Output frequency                   | 0.1...599 Hz                                                                                                                                                                                                                  |
| Nominal switching frequency        | 4 kHz                                                                                                                                                                                                                         |
| Switching frequency                | 1...16 kHz adjustable<br>4...16 kHz with derating factor                                                                                                                                                                      |
| Asynchronous motor control profile | Sensorless flux vector control (SFVC) (voltage or current vector)<br>ENA (Energy adaptation) system for unbalanced loads<br>Voltage/frequency ratio (2 or 5 points)<br>Flux vector control (FVC) with sensor (current vector) |
| Type of polarization               | No impedance for Modbus                                                                                                                                                                                                       |

## Complementary

|                                            |                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product destination                        | Asynchronous motors<br>Synchronous motors                                                                                                                                                                                                                                                                            |
| Power supply voltage limits                | 323...528 V                                                                                                                                                                                                                                                                                                          |
| Power supply frequency                     | 50...60 Hz - 5...5 %                                                                                                                                                                                                                                                                                                 |
| Power supply frequency limits              | 47.5...63 Hz                                                                                                                                                                                                                                                                                                         |
| Speed range                                | 1...100 for asynchronous motor in open-loop mode, without speed feedback<br>1...1000 for asynchronous motor in closed-loop mode with encoder feedback<br>1...50 for synchronous motor in open-loop mode, without speed feedback                                                                                      |
| Speed accuracy                             | +/- 0.01 % of nominal speed in closed-loop mode with encoder feedback 0.2 Tn to Tn<br>+/- 10 % of nominal slip without speed feedback 0.2 Tn to Tn                                                                                                                                                                   |
| Torque accuracy                            | +/- 15 % in open-loop mode, without speed feedback<br>+/- 5 % in closed-loop mode with encoder feedback                                                                                                                                                                                                              |
| Transient overtorque                       | 170 % of nominal motor torque +/- 10 % for 60 s every 10 minutes<br>220 % of nominal motor torque +/- 10 % for 2 s                                                                                                                                                                                                   |
| Braking torque                             | <= 150 % with braking or hoist resistor<br>30 % without braking resistor                                                                                                                                                                                                                                             |
| Synchronous motor control profile          | Vector control without speed feedback                                                                                                                                                                                                                                                                                |
| Regulation loop                            | Adjustable PI regulator                                                                                                                                                                                                                                                                                              |
| Motor slip compensation                    | Adjustable<br>Automatic whatever the load<br>Not available in voltage/frequency ratio (2 or 5 points)<br>Suppressable                                                                                                                                                                                                |
| Diagnostic                                 | 1 LED (red) drive voltage:                                                                                                                                                                                                                                                                                           |
| Output voltage                             | <= power supply voltage                                                                                                                                                                                                                                                                                              |
| Insulation                                 | Electrical between power and control                                                                                                                                                                                                                                                                                 |
| Type of cable for mounting in an enclosure | With a NEMA Type1 kit: 3 wire(s) UL 508 cable at 40 °C, copper 75 °C / PVC<br>With an IP21 or an IP31 kit: 3 wire(s) IEC cable at 40 °C, copper 70 °C / PVC<br>Without mounting kit: 1 wire(s) IEC cable at 45 °C, copper 70 °C / PVC<br>Without mounting kit: 1 wire(s) IEC cable at 45 °C, copper 90 °C / XLPE/EPR |
| Electrical connection                      | Terminal, clamping capacity: 2.5 mm², AWG 14 (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR)<br>Terminal, clamping capacity: 50 mm², AWG 1/0 (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)                                                                                             |
| Tightening torque                          | 0.6 N.m (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR)<br>12 N.m, 102.2 lb.in (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)                                                                                                                                                           |
| Supply                                     | Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection<br>Internal supply: 24 V DC (21...27 V), <200 mA, protection type: overload and short-circuit protection                                                               |
| Analogue input number                      | 2                                                                                                                                                                                                                                                                                                                    |
| Analogue input type                        | AI1-/AI1+ bipolar differential voltage: +/- 10 V DC 24 V max, resolution 11 bits + sign<br>AI2 software-configurable current: 0...20 mA, impedance: 242 Ohm, resolution 11 bits<br>AI2 software-configurable voltage: 0...10 V DC 24 V max, impedance: 30000 Ohm, resolution 11 bits                                 |
| Input sampling time                        | 2 ms +/- 0.5 ms (AI1-/AI1+) - analog input(s)<br>2 ms +/- 0.5 ms (AI2) - analog input(s)<br>2 ms +/- 0.5 ms (LI1...LI5) - discrete input(s)<br>2 ms +/- 0.5 ms (LI6) if configured as logic input - discrete input(s)                                                                                                |
| Response time                              | <= 100 ms in STO (Safe Torque Off)<br>AO1 2 ms, tolerance +/- 0.5 ms for analog output(s)<br>R1A, R1B, R1C 7 ms, tolerance +/- 0.5 ms for discrete output(s)<br>R2A, R2B 7 ms, tolerance +/- 0.5 ms for discrete output(s)                                                                                           |
| Absolute accuracy precision                | +/- 0.6 % (AI1-/AI1+) for a temperature variation 60 °C<br>+/- 0.6 % (AI2) for a temperature variation 60 °C<br>+/- 1 % (AO1) for a temperature variation 60 °C                                                                                                                                                      |
| Linearity error                            | +/- 0.15 % of maximum value (AI1-/AI1+, AI2)<br>+/- 0.2 % (AO1)                                                                                                                                                                                                                                                      |
| Analogue output number                     | 1                                                                                                                                                                                                                                                                                                                    |
| Analogue output type                       | AO1 software-configurable logic output 10 V 20 mA<br>AO1 software-configurable current 0...20 mA, impedance: 500 Ohm, resolution 10 bits<br>AO1 software-configurable voltage 0...10 V DC, impedance: 470 Ohm, resolution 10 bits                                                                                    |
| Discrete output number                     | 2                                                                                                                                                                                                                                                                                                                    |

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| Discrete output type                | Configurable relay logic: (R1A, R1B, R1C) NO/NC - 100000 cycles<br>Configurable relay logic: (R2A, R2B) NO - 100000 cycles                                                                                                                                                                                                                                                                                                                                                                              |
| Minimum switching current           | 3 mA at 24 V DC for configurable relay logic                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum switching current           | R1, R2: 2 A at 250 V AC inductive load, $\cos \phi = 0.4$<br>R1, R2: 2 A at 30 V DC inductive load, $\cos \phi = 0.4$<br>R1, R2: 5 A at 250 V AC resistive load, $\cos \phi = 1$<br>R1, R2: 5 A at 30 V DC resistive load, $\cos \phi = 1$                                                                                                                                                                                                                                                              |
| Discrete input number               | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Discrete input type                 | LI1...LI5: programmable 24 V DC with level 1 PLC, impedance: 3500 Ohm<br>LI6: switch-configurable 24 V DC with level 1 PLC, impedance: 3500 Ohm<br>LI6: switch-configurable PTC probe 0...6, impedance: 1500 Ohm<br>PWR: safety input 24 V DC, impedance: 1500 Ohm conforming to ISO 13849-1 level d                                                                                                                                                                                                    |
| Discrete input logic                | Negative logic (sink) (LI1...LI5), $> 16 \text{ V}$ (state 0), $< 10 \text{ V}$ (state 1)<br>Positive logic (source) (LI1...LI5), $< 5 \text{ V}$ (state 0), $> 11 \text{ V}$ (state 1)<br>Negative logic (sink) (LI6)if configured as logic input, $> 16 \text{ V}$ (state 0), $< 10 \text{ V}$ (state 1)<br>Positive logic (source) (LI6)if configured as logic input, $< 5 \text{ V}$ (state 0), $> 11 \text{ V}$ (state 1)                                                                          |
| Acceleration and deceleration ramps | Automatic adaptation of ramp if braking capacity exceeded, by using resistor<br>Linear adjustable separately from 0.01 to 9000 s<br>S, U or customized                                                                                                                                                                                                                                                                                                                                                  |
| Braking to standstill               | By DC injection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Protection type                     | Against exceeding limit speed: drive<br>Against input phase loss: drive<br>Break on the control circuit: drive<br>Input phase breaks: drive<br>Line supply overvoltage: drive<br>Line supply undervoltage: drive<br>Overcurrent between output phases and earth: drive<br>Overheating protection: drive<br>Overvoltages on the DC bus: drive<br>Short-circuit between motor phases: drive<br>Thermal protection: drive<br>Motor phase break: motor<br>Power removal: motor<br>Thermal protection: motor |
| Insulation resistance               | $> 1 \text{ mOhm}$ 500 V DC for 1 minute to earth                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Frequency resolution                | Analog input: 0.024/50 Hz<br>Display unit: 0.1 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Communication port protocol         | Modbus<br>CANopen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Connector type                      | 1 RJ45 (on front face) for Modbus<br>1 RJ45 (on terminal) for Modbus<br>Male SUB-D 9 on RJ45 for CANopen                                                                                                                                                                                                                                                                                                                                                                                                |
| Physical interface                  | 2-wire RS 485 for Modbus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Transmission frame                  | RTU for Modbus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Transmission rate                   | 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps for Modbus on terminal<br>9600 bps, 19200 bps for Modbus on front face<br>20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps for CANopen                                                                                                                                                                                                                                                                                                                   |
| Data format                         | 8 bits, 1 stop, even parity for Modbus on front face<br>8 bits, odd even or no configurable parity for Modbus on terminal                                                                                                                                                                                                                                                                                                                                                                               |
| Number of addresses                 | 1...127 for CANopen<br>1...247 for Modbus                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Method of access                    | Slave CANopen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Marking                             | CE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Operating position                  | Vertical $\pm 10$ degree                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Height                              | 550 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Depth                               | 266 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Width                               | 240 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Net weight                          | 37 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Option card                         | Communication card for CC-Link<br>Controller inside programmable card<br>Communication card for DeviceNet<br>Communication card for Ethernet/IP<br>Communication card for Fipio<br>I/O extension card<br>Communication card for Interbus-S                                                                                                                                                                                                                                                              |

Interface card for encoder  
Communication card for Modbus Plus  
Communication card for Modbus TCP  
Communication card for Modbus/Uni-Telway  
Overhead crane card  
Communication card for Profibus DP  
Communication card for Profibus DP V1

## Environment

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Noise level                           | 64 dB conforming to 86/188/EEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Dielectric strength                   | 3535 V DC between earth and power terminals<br>5092 V DC between control and power terminals                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Electromagnetic compatibility         | 1.2/50 $\mu$ s - 8/20 $\mu$ s surge immunity test level 3 conforming to IEC 61000-4-5<br>Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6<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<br>Voltage dips and interruptions immunity test conforming to IEC 61000-4-11 |
| Standards                             | EN/IEC 61800-5-1<br>EN 55011 class A group 2<br>IEC 60721-3-3 class 3S2<br>EN 61800-3 environments 2 category C3<br>UL Type 1<br>EN 61800-3 environments 1 category C3<br>IEC 60721-3-3 class 3C1<br>EN/IEC 61800-3                                                                                                                                                                                                                                                                                                     |
| Product certifications                | NOM 117<br>UL<br>C-Tick<br>CSA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Pollution degree                      | 2 conforming to EN/IEC 61800-5-1<br>3 conforming to UL 840                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| IP degree of protection               | IP20 on upper part without blanking plate on cover conforming to EN/IEC 60529<br>IP20 on upper part without blanking plate on cover conforming to EN/IEC 61800-5-1<br>IP21 conforming to EN/IEC 60529<br>IP21 conforming to EN/IEC 61800-5-1<br>IP41 on upper part conforming to EN/IEC 60529<br>IP41 on upper part conforming to EN/IEC 61800-5-1<br>IP54 on lower part conforming to EN/IEC 60529<br>IP54 on lower part conforming to EN/IEC 61800-5-1                                                                |
| Vibration resistance                  | 1 gn ( $f = 13 \dots 200$ Hz) conforming to EN/IEC 60068-2-6<br>1.5 mm peak to peak ( $f = 3 \dots 13$ 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 operation | -10...50 °C (without)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Ambient air temperature for storage   | -25...70 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Operating altitude                    | $\leq 1000$ m without<br>1000...3000 m with current derating 1 % per 100 m                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## Offer Sustainability

|                            |                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Sustainable offer status   | Green Premium product                                                                                                       |
| REACH Regulation           | <a href="#">REACH Declaration</a>                                                                                           |
| EU RoHS Directive          | Pro-active compliance (Product out of EU RoHS legal scope)<br><a href="#">EU RoHS Declaration</a>                           |
| Mercury free               | Yes                                                                                                                         |
| RoHS exemption information | <a href="#">Yes</a>                                                                                                         |
| China RoHS Regulation      | <a href="#">China RoHS declaration</a>                                                                                      |
| Environmental Disclosure   | <a href="#">Product Environmental Profile</a>                                                                               |
| Circularity Profile        | <a href="#">End of Life Information</a>                                                                                     |
| WEEE                       | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |

Contractual warranty

|          |           |
|----------|-----------|
| Warranty | 18 months |
|----------|-----------|