ATV71HC11N4383
variable speed drive ATV71 - 110kW-150HP - 480V - EMC filter-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.

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 110 kW, 3 phases at 380...480 V
Motor power hp 150 hp, 3 phases at 380...480 V
Maximum motor cable length 100 m shielded cable
200 m unshielded cable
Power supply voltage 380...480 V - 15...10 %
Network number of phases 3 phases
Line current 163 A for 480 V 3 phases 110 kW / 150 hp
202 A for 380 V 3 phases 110 kW / 150 hp
EMC filter Integrated
Assembly style With heat sink
Variant Reinforced version
Control synchronous motors with speed feedback
Apparent power 133 kVA at 380 V 3 phases 110 kW / 150 hp
Prospective line Isc 35 kA for 3 phases
Nominal output current 215 A at 2.5 kHz 380 V 3 phases 110 kW / 150 hp
215 A at 2.5 kHz 460 V 3 phases 110 kW / 150 hp
Maximum transient current 323 A for 60 s 3 phases 110 kW / 150 hp
355 A for 2 s 3 phases 110 kW / 150 hp
Output frequency 0.1…500 Hz
Nominal switching frequency 2.5 kHz
Switching frequency 2.5...8 kHz adjustable
2.5...8 kHz with derating factor
Asynchronous motor control profile Voltage/frequency ratio (2 or 5 points)
Flux vector control (FVC) with sensor (current vector)
ENA (Energy adaptation) system for unbalanced loads
Sensorless flux vector control (SFVC) (voltage or current vector)
Type of polarization No impedance for Modbus

Complementary
Product destination Synchronous motors
Asynchronous 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
1...1000 for asynchronous motor in closed-loop mode with encoder feedback
1...50 for synchronous motor in closed-loop mode, without speed feedback

Speed accuracy:
+/- 0.01 % of nominal speed in closed-loop mode with encoder feedback
+/- 10 % of nominal slip without speed feedback

Torque accuracy:
+/- 15 % in open-loop mode, without speed feedback
+/- 5 % in closed-loop mode with encoder feedback

Transient overtorque:
170 % of nominal motor torque +/- 10 % for 60 s every 10 minutes
220 % of nominal motor torque +/- 10 % for 2 s

Braking torque:
<= 150 % with braking or hoist resistor
30 % without braking resistor

Synchronous motor control profile:
Vector control without speed feedback
Vector control with speed feedback

Regulation loop:
Adjustable PI regulator

Motor slip compensation:
Suppressable
Automatic whatever the load
Adjustable
Not available in voltage/frequency ratio (2 or 5 points)

Diagnostic:
1 LED (red) drive 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
- With an IP21 or an IP31 kit: 3 wire(s) IEC cable at 45 °C, copper 70 °C / PVC
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, L1...L6, PWR)
Terminal, clamping capacity: 2 x 100 mm² (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3)
Terminal, clamping capacity: 60 mm² (PA, PB)
Terminal, clamping capacity: 2 x 150 mm² (PC/-, PO, PA/+)

Tightening torque:
0.6 N.m (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, L1...L6, PWR)
24 N.m, 212 lb.in (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3)
12 N.m, 108 lb.in (PA, PB)
41 N.m, 360 lb.in (PC/-, PO, PA/+)

Supply:
Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection
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
AI2 software-configurable current: 0...20 mA, impedance: 242 Ohm, resolution 11 bits
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)
2 ms +/- 0.5 ms (AI2) - analog input(s)
2 ms +/- 0.5 ms (L1...L5) - discrete input(s)
2 ms +/- 0.5 ms (L6) if configured as logic input - discrete input(s)

Response time:
<= 100 ms in STO (Safe Torque Off)
AO1 2 ms, tolerance +/- 0.5 ms for analog output(s)
R1A, R1B, R1C 7 ms, tolerance +/- 0.5 ms for discrete output(s)
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
+/- 0.6 % (AI2) for a temperature variation 60 °C
+/- 1 % (AO1) for a temperature variation 60 °C

Linearity error:
+/- 0.15 % of maximum value (AI1-/AI1+, AI2)
+/- 0.2 % (AO1)

Analogue output number: 1

Analogue output type:
AO1 software-configurable logic output 10 V 20 mA:
AO1 software-configurable current 0...20 mA, impedance: 500 Ohm, resolution 10 bits
AO1 software-configurable voltage 0...10 V DC, impedance: 470 Ohm, resolution 10 bits

Discrete output number: 2

Discrete output type:
Configurable relay logic: (R1A, R1B, R1C) NO/NC - 100000 cycles
### 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
- R1, R2: 2 A at 30 V DC inductive load, cos phi = 0.4
- R1, R2: 5 A at 250 V AC resistive load, cos phi = 1
- 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
- LI6: switch-configurable 24 V DC with level 1 PLC, impedance: 3500 Ohm
- LI6: switch-configurable PTC probe 0…6, impedance: 1500 Ohm
- 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 V (state 0), < 10 V (state 1)
- Positive logic (source) (LI1...LI5), < 5 V (state 0), > 11 V (state 1)
- Negative logic (sink) (LI6) if configured as logic input, > 16 V (state 0), < 10 V (state 1)
- Positive logic (source) (LI6) if configured as logic input, < 5 V (state 0), > 11 V (state 1)

### Acceleration and deceleration ramps
S, U or customized

- Linear adjustable separately from 0.01 to 9000 s
- Automatic adaptation of ramp if braking capacity exceeded, by using resistor

### Braking to standstill
By DC injection

### Protection type
- Against exceeding limit speed: drive
- Against input phase loss: drive
- Break on the control circuit: drive
- Input phase breaks: drive
- Line supply overvoltage: drive
- Line supply undervoltage: drive
- Overcurrent between output phases and earth: drive
- Overheating protection: drive
- Overvoltages on the DC bus: drive
- Short-circuit between motor phases: drive
- Thermal protection: drive
- Motor phase break: motor
- Power removal: motor
- Thermal protection: motor

### Insulation resistance
> 1 mOhm 500 V DC for 1 minute to earth

### Frequency resolution
- Analog input: 0.024/50 Hz
- Display unit: 0.1 Hz

### Communication port protocol
- Modbus
- CANopen

### Connector type
- 1 RJ45 (on front face) for Modbus
- 1 RJ45 (on terminal) for Modbus
- 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
- 9600 bps, 19200 bps for Modbus on front face
- 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
- 8 bits, odd even or no configurable parity for Modbus on terminal

### Number of addresses
- 1…127 for CANopen
- 1…247 for Modbus

### Method of access
- Slave CANopen

### Marking
- CE

### Operating position
- Vertical +/- 10 degree

### Height
- 1022 mm

### Depth
- 377 mm

### Width
- 360 mm

### Net weight
- 74 kg

### Option card
- Communication card for CC-Link
- Controller inside programmable card
- Communication card for DeviceNet
- Communication card for Ethernet/IP
- Communication card for Fipio
- I/O extension card
- Communication card for Interbus-S
- Interface card for encoder
### Environment

<table>
<thead>
<tr>
<th>Category</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise level</td>
<td>69.5 dB conforming to 86/188/EEC</td>
</tr>
<tr>
<td>Dielectric strength</td>
<td>3535 V DC between earth and power terminals</td>
</tr>
<tr>
<td></td>
<td>5092 V DC between control and power terminals</td>
</tr>
<tr>
<td>Electromagnetic compatibility</td>
<td>1.2/50 μs - 8/20 μs surge immunity test level 3 conforming to IEC 61000-4-5</td>
</tr>
<tr>
<td></td>
<td>Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6</td>
</tr>
<tr>
<td></td>
<td>Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4</td>
</tr>
<tr>
<td></td>
<td>Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2</td>
</tr>
<tr>
<td></td>
<td>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3</td>
</tr>
<tr>
<td></td>
<td>Voltage dips and interruptions immunity test conforming to IEC 61000-4-11</td>
</tr>
</tbody>
</table>

### Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 55011 class A group 2</td>
<td></td>
</tr>
<tr>
<td>EN 61800-3 environments 2 category C3</td>
<td></td>
</tr>
<tr>
<td>EN/IEC 61800-3</td>
<td></td>
</tr>
<tr>
<td>EN/IEC 61800-3 environments 1 category C3</td>
<td></td>
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<tr>
<td>EN/IEC 61800-5-1</td>
<td></td>
</tr>
<tr>
<td>UL Type 1</td>
<td></td>
</tr>
<tr>
<td>IEC 60721-3-3 class 3C2</td>
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</tr>
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### Product certifications

<table>
<thead>
<tr>
<th>Certification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOST</td>
<td></td>
</tr>
<tr>
<td>CSA</td>
<td></td>
</tr>
<tr>
<td>NOM 117</td>
<td></td>
</tr>
<tr>
<td>C-Tick</td>
<td></td>
</tr>
<tr>
<td>UL</td>
<td></td>
</tr>
</tbody>
</table>

### Pollution degree

<table>
<thead>
<tr>
<th>Degree</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2 conforming to EN/IEC 61800-5-1</td>
</tr>
<tr>
<td>3</td>
<td>3 conforming to UL 840</td>
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</tbody>
</table>

### IP degree of protection

<table>
<thead>
<tr>
<th>Degree</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>IP41</td>
<td>on upper part conforming to EN/IEC 60529</td>
</tr>
<tr>
<td>IP41</td>
<td>on upper part conforming to EN/IEC 61800-5-1</td>
</tr>
<tr>
<td>IP54</td>
<td>on lower part conforming to EN/IEC 60529</td>
</tr>
<tr>
<td>IP54</td>
<td>on lower part conforming to EN/IEC 61800-5-1</td>
</tr>
<tr>
<td>IP00</td>
<td>conforming to EN/IEC 60529</td>
</tr>
<tr>
<td>IP00</td>
<td>conforming to EN/IEC 61800-5-1</td>
</tr>
<tr>
<td>IP30</td>
<td>on side parts conforming to EN/IEC 60529</td>
</tr>
<tr>
<td>IP30</td>
<td>on side parts conforming to EN/IEC 61800-5-1</td>
</tr>
<tr>
<td>IP30</td>
<td>on the front panel conforming to EN/IEC 60529</td>
</tr>
<tr>
<td>IP30</td>
<td>on the front panel conforming to EN/IEC 61800-5-1</td>
</tr>
</tbody>
</table>

### Vibration resistance

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>0.8 gn (f= 10…200 Hz) conforming to EN/IEC 60068-2-6</td>
<td></td>
</tr>
<tr>
<td>1.5 mm peak to peak (f= 3…10 Hz) conforming to EN/IEC 60068-2-6</td>
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</tbody>
</table>

### Shock resistance

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>7 gn for 11 ms</td>
<td>conforming to EN/IEC 60068-2-27</td>
</tr>
</tbody>
</table>

### Relative humidity

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>5…95 %</td>
<td>without condensation conforming to IEC 60068-2-3</td>
</tr>
<tr>
<td>5…95 %</td>
<td>without dripping water conforming to IEC 60068-2-3</td>
</tr>
</tbody>
</table>

### Ambient air temperature for operation

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10…50 °C (without)</td>
<td></td>
</tr>
</tbody>
</table>

### Ambient air temperature for storage

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>-25…70 °C</td>
<td></td>
</tr>
</tbody>
</table>

### Operating altitude

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;= 1000 m without 1000…3000 m with current derating 1 % per 100 m</td>
<td></td>
</tr>
</tbody>
</table>

### Contractual warranty

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warranty</td>
<td>18 months</td>
</tr>
</tbody>
</table>