

# Product datasheet

Specifications



## variable speed drive ATV71Q - 132kW / 200HP - 380...480V - IP20

Local distributor code:

398229506

ATV71QC13N4

 **Discontinued on:** 22 Sept 2021

**EAN Code:** 3606480388958

 **Discontinued**

### Main

Range Of Product	Altivar 71Q
Product Or Component Type	Variable speed drive
Device Short Name	ATV71Q
Product Destination	Synchronous motors Asynchronous motors
Product Specific Application	Complex, high-power machines
Assembly Style	With heat sink
Variant	Reinforced version
Emc Filter	Integrated
Network Number Of Phases	3 phases
[Us] Rated Supply Voltage	380...480 V - 15...10 %
Supply Voltage Limits	323...528 V
Supply Frequency	50...60 Hz - 5...5 %
Network Frequency Limits	47.5...63 Hz
Motor Power Kw	132 kW, 3 phases at 380...480 V
Motor Power Hp	200 hp, 3 phases at 380...480 V
Maximum Motor Cable Length	100 m shielded cable without motor choke 200 m unshielded cable without motor choke 150 m shielded cable with motor choke 250 m unshielded cable with motor choke
Line Current	239 A for 380 V 3 phases 132 kW / 200 hp 192 A for 480 V 3 phases 132 kW / 200 hp

### Complementary

Apparent Power	157.3 kVA at 380 V 3 phases 132 kW / 200 hp
Prospective Line Isc	35 kA for 3 phases
Continuous Output Current	259 A at 2.5 kHz, 380 V - 3 phases 259 A at 2.5 kHz, 460 V - 3 phases
Maximum Transient Current	388 A for 60 s, 3 phases 427 A for 2 s, 3 phases
Speed Drive Output Frequency	0.1...500 Hz
Nominal Switching Frequency	2.5 kHz
Switching Frequency	2...8 kHz adjustable 2.5...8 kHz with derating factor

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

<b>Speed Range</b>	1...100 for asynchronous motor in open-loop mode, without speed feedback 1...50 for synchronous motor in open-loop mode, without speed feedback 1...1000 for asynchronous motor in closed-loop mode with encoder feedback
<b>Speed Accuracy</b>	+/- 0.01 % of nominal speed in closed-loop mode with encoder feedback 0.2 Tn to Tn +/- 10 % of nominal slip without speed feedback 0.2 Tn to Tn
<b>Torque Accuracy</b>	+/- 5 % in closed-loop mode with encoder feedback +/- 15 % in open-loop mode, without speed feedback
<b>Transient Overtorque</b>	170 % of nominal motor torque +/- 10 % for 60 s 220 % of nominal motor torque +/- 10 % for 2 s
<b>Braking Torque</b>	30 % without braking resistor ≤ 150 % with braking or hoist resistor
<b>Asynchronous Motor Control Profile</b>	Voltage/frequency ratio, 5 points Flux vector control without sensor, 2 points Flux vector control without sensor, standard Voltage/frequency ratio, 2 points Voltage/frequency ratio - Energy Saving, quadratic U/f Flux vector control with sensor, standard Flux vector control without sensor, ENA (energy Adaptation) system
<b>Synchronous Motor Control Profile</b>	Vector control with sensor, standard Vector control without sensor, standard
<b>Regulation Loop</b>	Adjustable PI regulator
<b>Motor Slip Compensation</b>	Automatic whatever the load Adjustable Suppressable Not available in voltage/frequency ratio (2 or 5 points)
<b>Local Signalling</b>	1 LED (red) for drive voltage
<b>Output Voltage</b>	≤ power supply voltage
<b>Isolation</b>	Electrical between power and control
<b>Type Of Cable</b>	Without mounting kit: 1 wire(s) IEC cable at 45 °C, copper 90 °C / XLPE/EPR Without mounting kit: 1 wire(s) IEC cable at 45 °C, copper 70 °C / PVC With an IP21 or an IP31 kit: 3 wire(s) IEC cable at 40 °C, copper 70 °C / PVC With a NEMA Type1 kit: 3 wire(s) UL 508 cable at 40 °C, copper 75 °C / PVC
<b>Electrical Connection</b>	Terminal 2.5 mm <sup>2</sup> / AWG 14 (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR) Terminal 2 x 120 mm <sup>2</sup> (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3) Terminal 2 x 120 mm <sup>2</sup> (PC/-, PO, PA/+) Terminal 120 mm <sup>2</sup> (PA, PB)
<b>Tightening Torque</b>	24 N.m, 212 lb.in (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3) 24 N.m, 212 lb.in (PC/-, PO, PA/+) 24 N.m, 212 lb.in (PA, PB) 0.6 N.m (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR)
<b>Supply</b>	Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC, +/- 5 %, <10 mA with overload and short-circuit protection Internal supply: 24 V DC (21...27 V), <200 mA with overload and short-circuit protection
<b>Analogue Input Number</b>	2
<b>Analogue Input Type</b>	AI2 software-configurable voltage: 0...10 V DC 24 V max, impedance: 30000 Ohm, resolution 11 bits 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
<b>Sampling Duration</b>	2 ms +/- 0.5 ms (LI6) if configured as logic input - discrete input 2 ms +/- 0.5 ms (LI1...LI5) - discrete input 2 ms +/- 0.5 ms (AI1-/AI1+) - analog output 2 ms +/- 0.5 ms (AI2) - analog output
<b>Accuracy</b>	+/- 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
<b>Linearity Error</b>	+/- 0.15 % of maximum value (AI1-/AI1+, AI2) +/- 0.2 % (AO1)

Analogue Output Number	1
Analogue Output Type	AO1 software-configurable voltage: 0...10 V DC, impedance: 470 Ohm, resolution 10 bits AO1 software-configurable current: 0...20 mA, impedance: 500 Ohm, resolution 10 bits AO1 software-configurable logic output 10 V 20 mA
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
Response Time	R1A, R1B, R1C 7 ms, tolerance +/- 0.5 ms R2A, R2B 7 ms, tolerance +/- 0.5 ms AO1 2 ms, tolerance +/- 0.5 ms <= 100 ms in STO (Safe Torque Off)
Minimum Switching Current	3 mA at 24 V DC for configurable relay logic
Maximum Switching Current	5 A at 250 V AC on resistive load - cos phi = 1 - L/R = 0 ms (R1, R2) 5 A at 30 V DC on resistive load - cos phi = 1 - L/R = 0 ms (R1, R2) 2 A at 250 V AC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1, R2) 2 A at 30 V DC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1, R2)
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	Positive logic (source) (LI6)if configured as logic input, < 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) (LI1...LI5), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (LI1...LI5), > 16 V (state 0), < 10 V (state 1) Positive logic (source) (PWR), < 2 V (state 0), > 17 V (state 1)
Acceleration And Deceleration Ramps	Linear adjustable separately from 0.01 to 9000 s Automatic adaptation of ramp if braking capacity exceeded, by using resistor S, U or customized
Braking To Standstill	By DC injection
Protection Type	Overheating protection: drive Thermal protection: drive Short-circuit between motor phases: drive Input phase breaks: drive Overcurrent between output phases and earth: drive Overvoltages on the DC bus: drive Break on the control circuit: drive Against exceeding limit speed: drive Line supply undervoltage: drive Line supply overvoltage: drive Against input phase loss: drive Thermal protection: motor Motor phase break: motor Power removal: motor
Dielectric Strength	3535 V DC between earth and power terminals 5092 V DC between control and power terminals
Insulation Resistance	> 1 mOhm 500 V DC for 1 minute to earth
Frequency Resolution	Display unit: 0.1 Hz Analog input: 0.024/50 Hz
Communication Port Protocol	CANopen Modbus
Connector Type	1 RJ45 (on front face) for Modbus 1 RJ45 (on terminal) for Modbus 1 RJ45 for CANopen
Physical Interface	2-wire RS 485 for Modbus
Transmission Frame	RTU for Modbus

Transmission Rate	9600 bps, 19200 bps for Modbus on front face 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps for Modbus on terminal 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
Type Of Polarization	No impedance for Modbus
Number Of Addresses	1...247 for Modbus 1...127 for CANopen
Method Of Access	Slave CANopen
Type Of Cooling	Water cooled
Cooling Fluid Type	Water-glycol mixture Industrial water Clean water
Operating Temperature Water	5...55 °C
Thermal Losses	2400 W 100 % of line current for area of liquid cooling (power part) 530 W 100 % of line current for area of air cooling (control part)
Flow Velocity	8
Pressure Drop	1.5 bar
Volume Of Cooling Water	0.2 l
Operating Position	Vertical +/- 10 degree
Net Weight	80 kg
Option Card	Communication card for Modbus TCP Communication card for Fipio Communication card for Modbus/Uni-Telway Communication card for Modbus Plus Communication card for EtherNet/IP Communication card for DeviceNet Communication card for Profibus DP Communication card for Profibus DP V1 Communication card for Interbus-S Communication card for CC-Link Interface card for encoder I/O extension card Controller inside programmable card Overhead crane card
Width	330 mm
Height	950 mm
Depth	377 mm

## Environment

Ambient Air Temperature For Operation	-10...50 °C (without derating)
Ambient Air Temperature For Storage	-25...70 °C
Operating Altitude	<= 1000 m without derating 1000...3000 m with current derating 1 % per 100 m
Electromagnetic Compatibility	Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6 Voltage dips and interruptions immunity test conforming to IEC 61000-4-11
Pollution Degree	2 conforming to EN/IEC 61800-5-1 3 conforming to UL 840

Ip Degree Of Protection	IP00 conforming to EN/IEC 61800-5-1 IP00 conforming to EN/IEC 60529 IP41 on upper part conforming to EN/IEC 61800-5-1 IP41 on upper part conforming to EN/IEC 60529 IP30 on the front panel conforming to EN/IEC 61800-5-1 IP30 on the front panel conforming to EN/IEC 60529 IP30 on side parts conforming to EN/IEC 61800-5-1 IP30 on side parts conforming to EN/IEC 60529 IP54 on lower part conforming to EN/IEC 61800-5-1 IP54 on lower part conforming to EN/IEC 60529
Vibration Resistance	1.5 mm peak to peak (f= 3...10 Hz) conforming to EN/IEC 60068-2-6 0.6 gn (f= 10...200 Hz) conforming to EN/IEC 60068-2-6
Shock Resistance	7 gn for 11 ms conforming to EN/IEC 60068-2-27
Relative Humidity	5...95 % without condensation conforming to IEC 60068-2-3 5...95 % without dripping water conforming to IEC 60068-2-3
Noise Level	66 dB conforming to 86/188/EEC
Standards	EN 61800-3 environments 1 category C3 EN 55011 class A group 2 IEC 61508 SIL2 ISO 13849-1 level d EN/IEC 61800-3 IEC 60721-3-3 class 3C2 EN/IEC 61800-5-1 EN 61800-3 environments 2 category C3 UL Type 1
Product Certifications	C-Tick UL CSA NOM 117 GOST
Marking	CE

## Packing Units

Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	53.0 cm
Package 1 Width	38.0 cm
Package 1 Length	129.0 cm
Package 1 Weight	100.0 kg

## Contractual warranty

Warranty	18 months
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## Sustainability



**Green Premium™ label** is Schneider Electric’s commitment to delivering products with best-in-class environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO<sub>2</sub> products.

**Guide to assessing product sustainability** is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

[Learn more about Green Premium >](#)

[Guide to assess a product’s sustainability >](#)

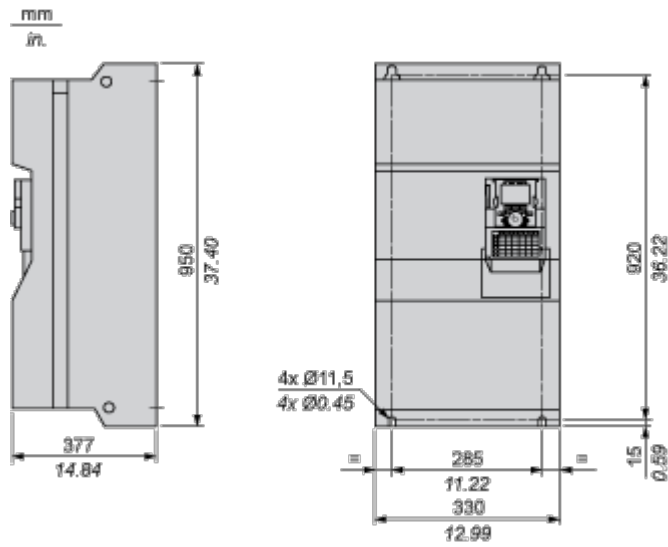
## Well-being performance

 Mercury Free	
 Rohs Exemption Information	<a href="#">Yes</a>
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
China Rohs Regulation	<a href="#">China RoHS declaration</a>
Weee	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins

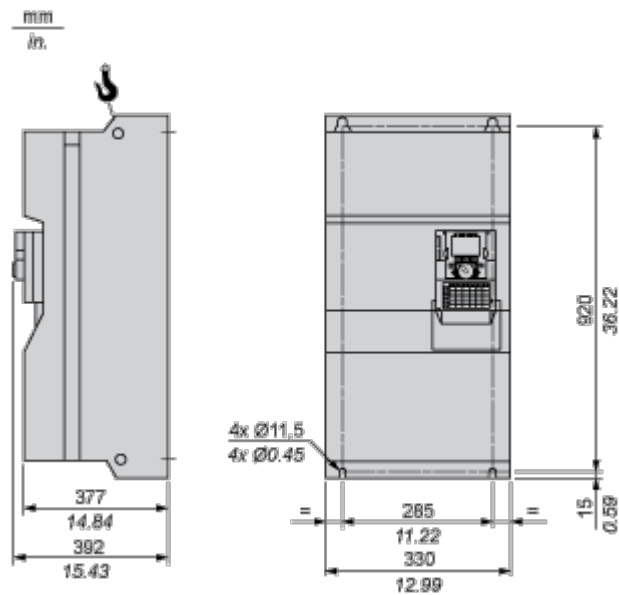
Dimensions Drawings

Dimensions

Without or with 1 option card



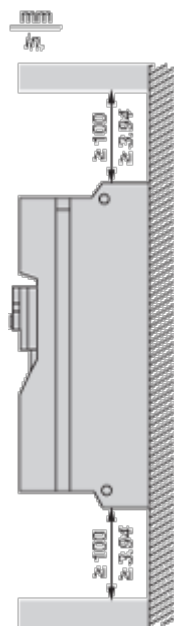
With 2 option cards



Mounting and Clearance

Clearance

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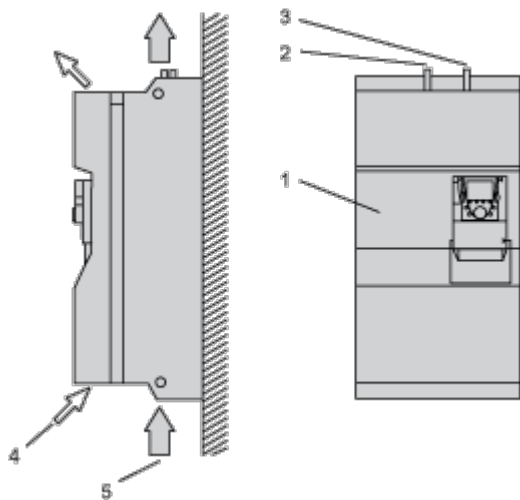




### Wall-Mounting

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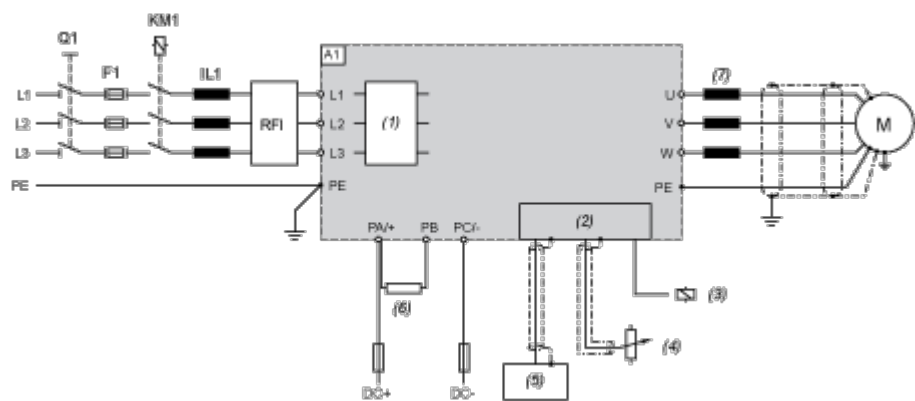
The drive is designed for installation on the wall, in an electrical room or into an enclosure. The device is built according to pollution degree 2. If the environment does not correspond to these conditions then the necessary transition of the pollution degree must be provided e.g. by means of an enclosure.



- (1) Drive
- (2) Cooling water inlet
- (3) Cooling water return
- (4) Cooling air for control part
- (5) Cooling air for power part (only capacitors)

Connections and Schema

Wiring Diagram

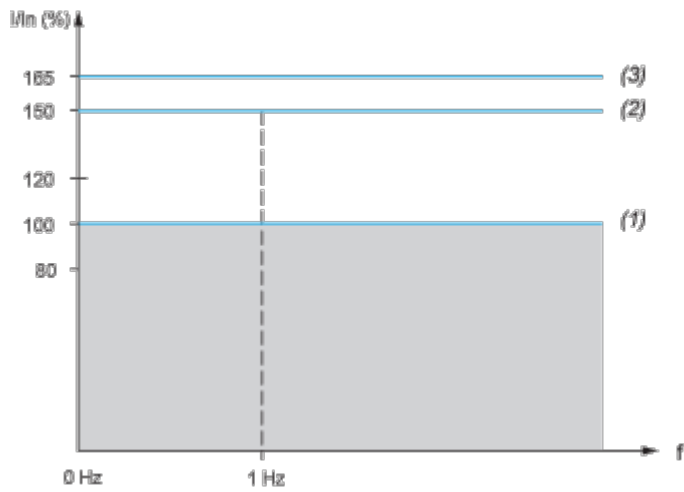


- A1 Drive
- F1 Fast-acting semi-conductor fuse
- IL1 Line choke
- KM1 Optional line contactor
- M Motor
- Q1 Switch
- RFI Optional radio frequency interference filter
- (1) Filter
- (2) Control
- (3) Relay control
- (4) Control potentiometer
- (5) PLC
- (6) External optional braking resistor
- (7) Optional motor choke

Performance Curves

Continuous Current at Output Frequencies < 1 Hz

Due to the especially efficient liquid cooling of the drive the full overload capability is also available in the speed range of 0 Hz.



- (1) Continuous operation: 150% (165%) overload capability
- (2) Overload 150% for 60 s
- (3) Overload 165% for 2 s

Power Derating

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4 kHz pulse frequency	+5°K air temperature
8%	10%