

# Product data sheet

Specifications



## enclosed variable speed drive ATV61 Plus - 310 kW - 400V - IP54

ATV61EXC5C31N4

⚠ Discontinued on: Oct 22, 2021

⚠ To be end-of-service on: Dec 31, 2024

⚠ Discontinued - Service only

### Main

Range Of Product	Altivar 61 Plus
Product Or Component Type	Variable speed drive
Device Short Name	ATV61
Product Destination	Synchronous motors Asynchronous motors
Product Specific Application	Pumping and ventilation machine
Assembly Style	In floor-standing enclosure compact version
Product Composition	An IP65 remote mounting kit for graphic display terminal A wired ready-assembled Sarel Spacial 6000 enclosure A switch and fast-acting fuses A line choke Terminals/bars for motor connection ATV61HC31N4D standard drive IP00
Emc Filter	Integrated
Network Number Of Phases	3 phases
Rated Supply Voltage	380...415 V +/- 10 %
Supply Voltage Limits	342...457 V
Supply Frequency	50...60 Hz - 5...5 %
Network Frequency Limits	47.5...63 Hz
Motor Power Kw	315 kW, 3 phases at 380...415 V
Line Current	527 A at 400 V3 phases / 315 kW
Ip Degree Of Protection	IP54

### Complementary

Apparent Power	365 kVA for 400 V, 3 phases 315 kW
Prospective Line Isc	100 kA with external fuses
Continuous Output Current	616 A, 2.5 kHz at 400 V 3 phases
Maximum Transient Current	739 A for 60 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
Speed Range	1...100 in open-loop mode, without speed feedback
Speed Accuracy	+/- 10 % of nominal slip 0.2 Tn to Tn without speed feedback

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>Torque Accuracy</b>	+/- 15 % in open-loop mode, without speed feedback
<b>Transient Overtorque</b>	120 % of nominal motor torque for 60 s 135 % of nominal motor torque for 2 s
<b>Braking Torque</b>	<= 125 % with braking resistor 30 % without braking resistor
<b>Asynchronous Motor Control Profile</b>	Energy saving ratio Flux vector control without sensor, standard Voltage/frequency ratio (2 or 5 points)
<b>Synchronous Motor Control Profile</b>	Vector control without sensor, standard
<b>Regulation Loop</b>	Adjustable PI regulator
<b>Motor Slip Compensation</b>	Automatic whatever the load Adjustable Not available in voltage/frequency ratio (2 or 5 points) Can be suppressed
<b>Overvoltage Category</b>	Class 3 conforming to EN 50178
<b>Local Signalling</b>	LCD display unit for operation function, status and configuration - mounted in the front door
<b>Output Voltage</b>	<= power supply voltage
<b>Isolation</b>	Between power and control terminals
<b>Type Of Cable For External Connection</b>	IEC cable at 40 °C, copper 70 °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) entry from the bottom Terminal M12 - 4 x 240 mm <sup>2</sup> (U/T1, V/T2, W/T3) entry from the bottom Terminal M12 - 3 x 185 mm <sup>2</sup> (L1/R, L2/S, L3/T) entry from the bottom
<b>Motor Recommended Cable Cross Section</b>	3 (3 x 150) mm <sup>2</sup>
<b>Short-Circuit Protection</b>	800 A fuse protection type gI - power supply upstream
<b>Supply</b>	External supply: 24 V (19...30 V)DC, <1 A, 30 W Internal supply for reference potentiometer: 10 V (10...11 V)DC, <10 mA Internal supply: 24 V (21...27 V)DC, <100 mA
<b>Analogue Input Number</b>	2
<b>Analogue Input Type</b>	AI2 software-configurable voltage: 0...10 V DC, 24 V max, impedance: 30 kOhm, sampling time: 1.5...2.5 ms, resolution: 11 bits AI1-/AI1+ bipolar differential voltage: +/- 10 V DC, 24 V max, sampling time: 1.5...2.5 ms, resolution: 11 bits + sign AI2 software-configurable current: 0...20 mA/4...20 mA, impedance: 250 Ohm, sampling time: 1.5...2.5 ms, resolution: 11 bits
<b>Analogue Output Number</b>	1
<b>Analogue Output Type</b>	Software-configurable voltage: (AO1) 0...10 V DC - 470 Ohm - sampling time: 1.5...2.5 ms - resolution: 10 bits Software-configurable current: (AO1) 0...20 mA/4...20 mA - 500 Ohm - sampling time: 1.5...2.5 ms - resolution: 10 bits
<b>Discrete Output Number</b>	2
<b>Discrete Output Type</b>	Configurable relay logic: (R1A, R1B, R1C)NO/NC - 6.5...7.5 ms - 100000 cycles Configurable relay logic: (R2A, R2B)NO - 6.5...7.5 ms - 100000 cycles
<b>Minimum Switching Current</b>	3 mA at 24 V DC (configurable relay logic)
<b>Maximum Switching Current</b>	5 A at 250 V AC on resistive load - cos phi = 1 for configurable relay logic 5 A at 30 V DC on resistive load - L/R = 0 ms for configurable relay logic 2 A at 250 V AC on inductive load - cos phi = 0.4 for configurable relay logic 2 A at 30 V DC on inductive load - L/R = 7 ms for configurable relay logic
<b>Discrete Input Number</b>	7

<b>Discrete Input Type</b>	Programmable (LI1...LI5) at 24 V DC <= 30 V level 1 PLC 3.5 kOhm (duration=1.5... 2.5 ms) Switch-configurable (LI6) at 24 V DC <= 30 V level 1 PLC 1.5 kOhm (duration=1.5... 2.5 ms) Safety input (PWR) at 24 V DC <= 30 V 1.5 kOhm
<b>Discrete Input Logic</b>	Positive logic (source) (LI1...LI6), 0...5 V (state 0), 11...30 V (state 1) Negative logic (sink) (LI1...LI6), 16...30 V (state 0), 0...10 V (state 1) Positive logic (source) (PWR), 0...2 V (state 0), 17...30 V (state 1)
<b>Acceleration And Deceleration Ramps</b>	Linear adjustable separately from 0.01 to 9000 s S, U or customized
<b>Braking To Standstill</b>	By DC injection
<b>Protection Type</b>	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 Power removal: drive Short-circuit between motor phases: drive Thermal protection: drive Motor phase break: motor Power removal: motor Thermal protection: motor
<b>Dielectric Strength</b>	3535 V DC between earth and power terminals 5092 V DC between control and power terminals
<b>Insulation Resistance</b>	> 1 mOhm 500 V DC for 1 minute to earth
<b>Frequency Resolution</b>	Analog input: 0.024/50 Hz Display unit: 0.1 Hz
<b>Communication Port Protocol</b>	Modbus CANopen
<b>Connector Type</b>	1 RJ45 (on front face) for Modbus 1 RJ45 (on terminal) for Modbus Male SUB-D 9 on RJ45 for CANopen
<b>Physical Interface</b>	2-wire RS 485 for Modbus
<b>Transmission Frame</b>	RTU for Modbus
<b>Transmission Rate</b>	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
<b>Data Format</b>	8 bits, 1 stop, even parity for Modbus on front face 8 bits, odd even or no configurable parity for Modbus on terminal
<b>Type Of Polarization</b>	No impedance for Modbus
<b>Number Of Addresses</b>	1...127 for CANopen 1...247 for Modbus
<b>Method Of Access</b>	Slave CANopen

Function Available	Safe standstill for power circuit PTC relay for power circuit Pt100 relay for power circuit Insulation monitoring for power circuit Design for IT networks for power circuit External 230 V supply terminals for power circuit Buffer voltage 24 V DC power supply for power circuit Enclosure lighting for power circuit Key switch (local/remote) for power circuit Motor heating for power circuit External motor fan for power circuit Voltmeter for power circuit Door handle for main switch for power circuit Line contactor for power circuit 12-pulse supply for power circuit Ammeter for power circuit Enclosure heating for power circuit Motor choke for power circuit Cable entry via the top for power circuit Enclosure plinth for power circuit Braking unit for power circuit Relay output C/O for control circuit External 24 V DC supply terminals for power circuit Control terminals for control circuit Adaptor for 115 V logic inputs for control circuit Isolated amplifier for control circuit
Option Card	Communication card for APOGEE FLN Communication card for BACnet Communication card for CC-Link Communication card for DeviceNet Communication card for EtherNet/IP Communication card for Fipio Communication card for Interbus-S Communication card for LonWorks Communication card for METASYS N2 Communication card for Modbus Plus Communication card for Modbus TCP Communication card for Modbus/Uni-Telway Communication card for Profibus DP Communication card for Profibus DP V1 Controller inside programmable card Multi-pump card Basic I/O extension card Extended I/O extension card Encoder interface cards
Operating Position	Vertical +/- 10 degree
Colour Of Enclosure	Light grey (RAL 7035)
Width	800 mm
Height	2262 mm
Depth	642 mm
Net Weight	485 kg
<h2>Environment</h2>	
Electromagnetic Compatibility	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 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 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 Voltage dips and interruptions immunity test conforming to IEC 61000-4-11
Standards	EN 55011 class A group 2 EN/IEC 61800-3 EN 61800-3 environments 2 category C3 EN 61800-3 environments 1 category C3 EN/IEC 61800-5-1
Product Certifications	GOST ATEX

Marking	CE
Noise Level	68 dB
Pollution Degree	3 conforming to EN/IEC 61800-5-1
Vibration Resistance	0.6 gn (f= 10...200 Hz) conforming to EN/IEC 60068-2-6 1.5 mm peak to peak (f= 3...10 Hz) conforming to EN/IEC 60068-2-6 3M3 conforming to EN/IEC 60721-3-3
Shock Resistance	4 gn for 11 ms conforming to EN/IEC 60068-2-27 3M2 conforming to EN/IEC 60721-3-3
Environmental Characteristic	3C2 without condensation conforming to IEC 60721-3-3 3S2 without condensation conforming to IEC 60721-3-3 3K3 without condensation conforming to IEC 60721-3-3
Relative Humidity	0...95 %
Ambient Air Temperature For Operation	0...40 °C (without derating) 40...50 °C (with current derating of 1.8 % per °C)
Ambient Air Temperature For Storage	-25...70 °C
Volume Of Cooling Air	1200 m3/h
Operating Altitude	<= 1000 m without derating 1000...3000 m with current derating 1 % per 100 m

## Packing Units

Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	216.0 cm
Package 1 Width	66.0 cm
Package 1 Length	101.6 cm
Package 1 Weight	485.0 kg

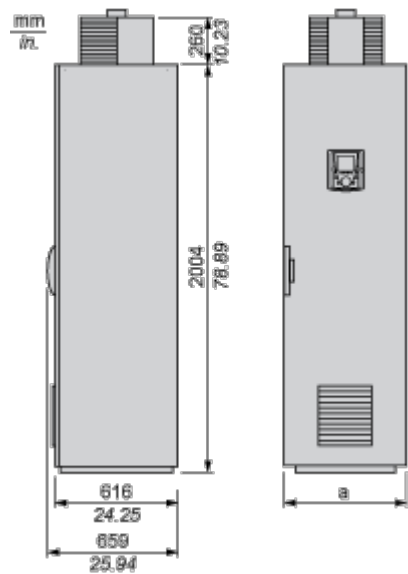
## Contractual warranty

Warranty	18 months
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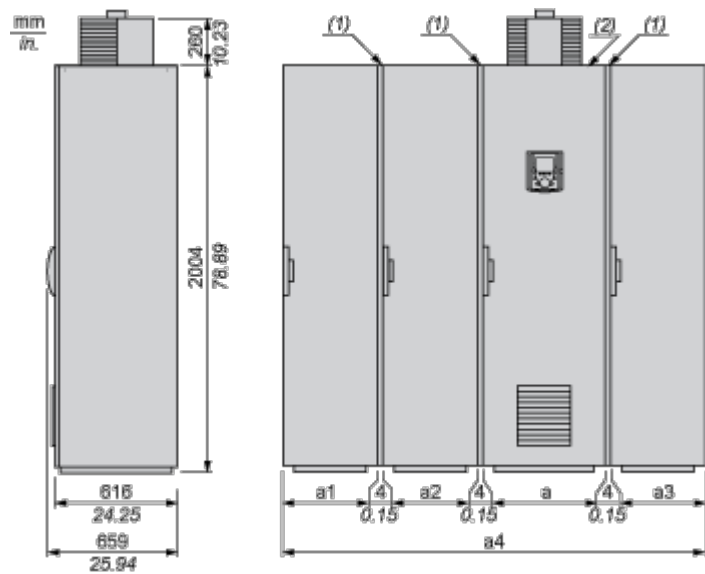
Dimensions Drawings

IP 54 Floor-Standing Enclosure Compact Version

Standard Compact Floor-Standing Enclosure



Standard Compact Floor-Standing Enclosure + Additional Floor-Standing Enclosures, According to the Configuration



- (1) Seal. For each floor-standing enclosure added, allow a 4 mm/0.15 in. space for the seal.
- (2) Standard IP 54 compact version floor-standing enclosure.

NOTE: The position of the enclosures must be complied with during installation. The number of additional enclosures can vary according to the chosen configuration.

Options	a	a1	a2	a3	a4
With or without common options or options (6) dependent on the drive rating	816 mm/ 32.1 in.	–	–	–	816 mm/ 32.1 in.
Cable entry via the top option (4)	808 mm/ 31.8 in.	–	408 mm/ 16 in.	–	1220 mm/ 48 in.
Sinus filter option	808 mm/ 31.8 in.	–	–	608 mm/ 23.9 in.	1420 mm/ 55.9 in.
<p>(3) Except sinus filter option, which requires an additional enclosure. The sinus filter option is not compatible with the cable entry via the top option.</p> <p>(4) The cable entry via the top option is not compatible with the sinus filter option.</p>					

Connections and Schema

Floor-Standing Enclosure Compact Version

Wiring Diagram



- A1 Drive
- A2 Enclosure
- F1 Fast-acting semi-conductor fuse
- IL1 Line choke
- Q1 Switch
- (1) Fault relay contacts. For remote signalling of drive status.



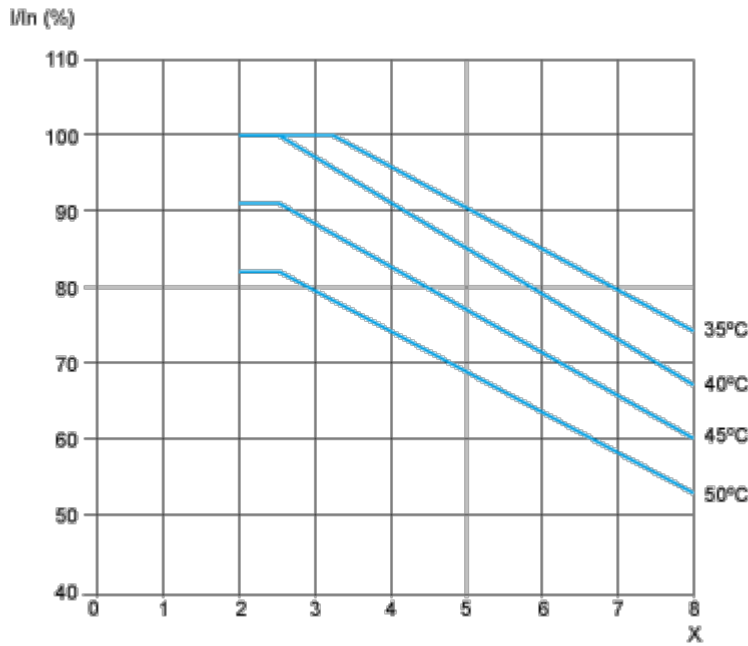
Performance Curves

Ready to Use IP 54 Enclosure

Derating Curves

The derating curves for the drive nominal current (In) are dependent on the temperature and switching frequency. For intermediate temperatures, interpolate between 2 curves.

NOTE: The drive will reduce the switching frequency automatically in the event of excessive temperature rise.



X    Switching frequency (kHz)

NOTE: The temperatures shown correspond to the temperature of the air entering the enclosure.