



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 with separate air flows Ready to use
Product composition	Motor terminals A wired ready-assembled Sarel Spacial 6000 enclosure A plinth ATV61HC11N4 drive on heatsink A DC choke Circuit breaker An IP65 remote mounting kit for graphic display terminal
EMC filter	Integrated
Network number of phases	3 phases
Rated supply voltage	380...415 V (+/- 10 %)
Supply frequency	50...60 Hz
Motor power kW	110 kW, 3 phases at 380...415 V
Line current	189 A 3 phases / 110 kW
IP degree of protection	IP54

Complementary

Apparent power	133 kVA for 400 V 3 phases / 110 kW
Prospective line I _{sc}	<= 50 kA with external fuses
Continuous output current	215 A at 2.5 kHz, 400 V 3 phases
Maximum transient current	258 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 for 0.2 T _n to T _n torque variation without speed feedback

Torque accuracy	+/- 15 % in open-loop mode, without speed feedback
Transient overtorque	120 % of nominal motor torque for 60 s 135 % of nominal motor torque for 2 s
Braking torque	30 % without braking resistor <= 125 % with braking resistor
Asynchronous motor control profile	Voltage/frequency ratio, 2 points Flux vector control without sensor, standard Voltage/frequency ratio - Energy Saving, quadratic U/f Voltage/frequency ratio, 5 points
Synchronous motor control profile	Vector control without sensor, standard
Regulation loop	Adjustable PI regulator
Motor slip compensation	Adjustable Suppressable Not available in voltage/frequency ratio (2 or 5 points) Automatic whatever the load
Supply voltage limits	342...457 V
Network frequency limits	47.5...63 Hz
Overvoltage category	Class 3 EN 50178
Local signalling	LCD display unit - operation function, status and configuration
Output voltage	<= supply voltage
Isolation	Electrical between power and control
Type of cable for external connection	IEC cable at 40 °C, copper 70 °C / PVC
Electrical connection	Terminal M10 - 2 x 150 mm ² (U/T1, V/T2, W/T3) Terminal - 2.5 mm ² / AWG 14 (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR) Terminal M12 - 2 x 185 mm ² (L1/R, L2/S, L3/T)
Motor recommended cable cross section	3 x 120 mm ²
Short-circuit protection	250 A fuse protection (gl fuse) on power supply upstream
Supply	External supply : 24 V (19...30 V) DC, 1 A Internal supply for reference potentiometer : 10 V (10...11 V) DC, <= 10 A Internal supply : 24 V (21...27 V) DC, <= 100 A
Analogue input number	2
Analogue input type	Software-configurable current : (AI2) 0...20 mA/4...20 mA - 250 Ohm - sampling time: 1.5...2.5 ms - resolution: 11 bits Software-configurable voltage : (AI2) 0...10 V DC - 24 V max - 30 kOhm - sampling time: 1.5...2.5 ms - resolution: 11 bits Bipolar differential voltage : (AI1-/AI1+) +/- 10 V DC - 24 V max - sampling time: 1.5...2.5 ms - resolution: 11 bits + sign
Analogue output number	1
Analogue output type	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
Discrete output number	2
Discrete output type	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
Minimum switching current	3 mA at 24 V DC (configurable relay logic)
Maximum switching current	5 A at 250 V AC on resistive load - cos phi = 1 (configurable relay logic) 2 A at 30 V DC on inductive load - L/R = 7 ms (configurable relay logic) 5 A at 30 V DC on resistive load - L/R = 0 ms (configurable relay logic) 2 A at 250 V AC on inductive load - cos phi = 0.4 (configurable relay logic)
Discrete input number	7
Discrete input type	Programmable (LI1...LI5) 24 V DC (<= 30 V), with level 1 PLC - 3.5 kOhm - sampling time: 1.5...2.5 ms Switch-configurable (LI6) 24 V DC (<= 30 V), with level 1 PLC - 1.5 kOhm - sampling time: 1.5...2.5 ms Safety input (PWR) 24 V DC (<= 30 V) - 1.5 kOhm
Discrete input logic	Positive (LI1...LI6), 0...5 V (state 0), 11...30 V (state 1) Negative (LI1...LI6), 16...30 V (state 0), 0...10 V (state 1) Positive (PWR), 0...2 V (state 0), 17...30 V (state 1)
Acceleration and deceleration ramps	S, U or customized Linear adjustable separately from 0.01 to 9000 s

Braking to standstill	By DC injection, <= 60 s
Protection type	Overheating protection for drive Thermal protection for drive Short-circuit between motor phases for drive Overcurrent between output phases and earth for drive Overvoltages on the DC bus for drive Break on the control circuit for drive Against exceeding limit speed for drive Line supply undervoltage for drive Line supply overvoltage for drive Against input phase loss for drive Thermal protection for motor Motor phase break for motor Power removal for drive Input phase breaks for drive Power removal for motor
Dielectric strength	3535 V DC between earth and power terminals 5092 V DC between control and power terminals
Insulation resistance	> 1 mOhm at 500 V DC for 1 minute
Frequency resolution	0.1 Hz for display unit 0.024/50 Hz for analog input
Communication port protocol	Modbus CANopen
Connector type	1 RJ45 for Modbus on front face 1 RJ45 for Modbus on terminal Male SUB-D 9 on RJ45 for CANopen
Physical interface	2-wire RS 485 for Modbus
Transmission frame	RTU for Modbus
Transmission rate	20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps for CANopen 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps for Modbus on terminal 9600 bps, 19200 bps for Modbus on front face
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 addresses for Modbus 1...127 addresses for CANopen
Method of access	Slave for CANopen
Operating position	Vertical +/- 10 degree
Colour of enclosure	Light grey RAL 7035
Colour of base of enclosure	Dark grey RAL 7022
Width	600 mm
Height	2362 mm
Depth	642 mm
Product weight	300 kg

Environment

Electromagnetic compatibility	1.2/50 μ s - 8/20 μ s surge immunity test level 3 conforming to IEC 61000-4-5 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 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6
Standards	EN 61800-3 environments 1 category C3 EN 55011 class A group 2 EN/IEC 61800-5-1 EN/IEC 61800-3 EN 61800-3 environments 2 category C3
Product certifications	ATEX GOST
Marking	CE
Noise level	64 dB
Pollution degree	3 conforming to EN/IEC 61800-5-1
Vibration resistance	3M3 conforming to EN/IEC 60721-3-3

	0.6 gn (f = 10...200 Hz) conforming to EN/IEC 60068-2-6 1.5 mm (f = 3...10 Hz) conforming to EN/IEC 60068-2-6
Shock resistance	3M2 conforming to EN/IEC 60721-3-3 4 gn for 11 ms conforming to EN/IEC 60068-2-27
Environmental characteristic	3C2 without condensation conforming to IEC 60721-3-3 3K3 without condensation conforming to IEC 60721-3-3 3S2 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 2 % per °C
Ambient air temperature for storage	-25...70 °C
Volume of cooling air	500 m3/h
Operating altitude	<= 1000 m without derating 1000...3000 m with current derating 1 % per 100 m

Offer Sustainability

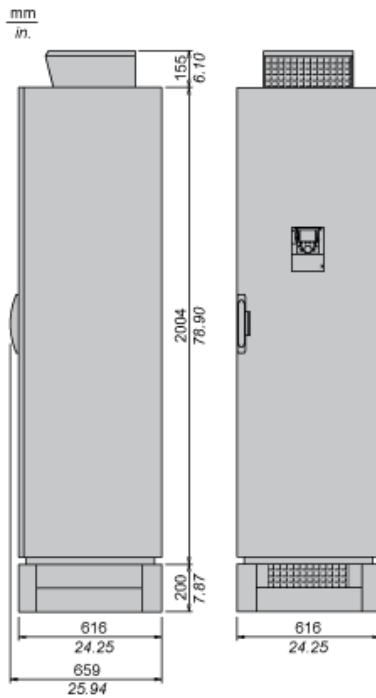
RoHS (date code: YYWW)	Will be compliant on 4Q2013 Will be compliant on 4Q2013
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Contractual warranty

Warranty period	18 months
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Ready to Use IP 54 Enclosure

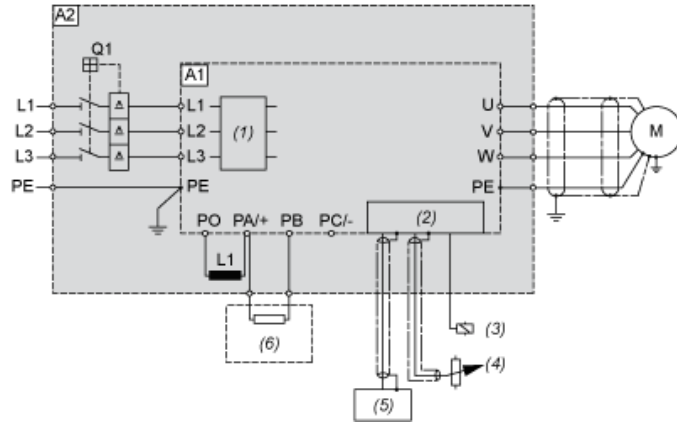
Dimensions



NOTE: For each floor-standing enclosure added, allow a 4 mm/0.15 in. space for the seal.

Ready to Use IP 54 Enclosure

Wiring Diagram



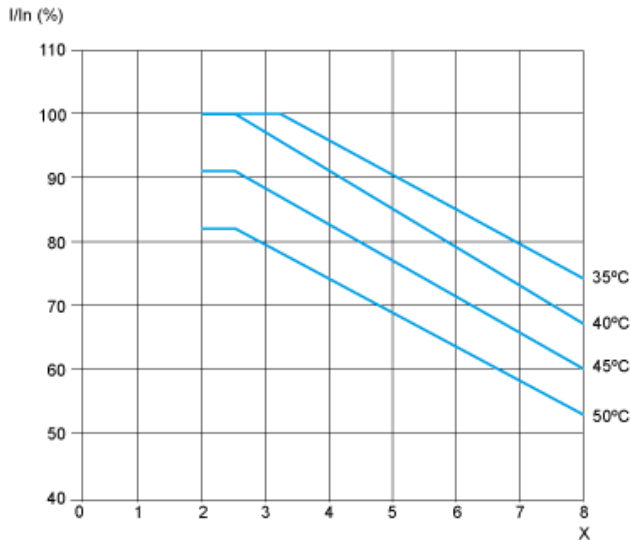
- A1 Drive
- A2 Enclosure
- L1 DC choke
- M Motor
- Q1 Circuit breaker
- (1) Filter
- (2) Control
- (3) Relay control
- (4) Reference potentiometer
- (5) PLC
- (6) External optional braking resistor

Ready to Use IP 54 Enclosure

Derating Curves

The derating curves for the drive nominal current (I_n) 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.

ATV61ES5C11N4 may be replaced by any of the following products:



Drive Products ATV650C11N4F

variable speed drive ATV650 - 110kW - 380...440V - IP54 - disconnect switch

Qty 1

Reason for Substitution: End of life | Substitution date: 01 April 2016



Drive Products ATV650C13N4F

variable speed drive ATV650 - 130kW - 380...440V - IP54 - disconnect switch

Qty 1

Reason for Substitution: End of life | Substitution date: 01 April 2016