

ATV630C16N4F

Variable speed drive, Altivar Process ATV600,
ATV630, 160 kW, 380...440 V, IP21

Main

Range of product	Altivar Process ATV600
Product or component type	Variable speed drive
Product specific application	Process and utilities
Device short name	ATV630
Variant	Standard version
Product destination	Asynchronous motors Synchronous motors
EMC filter	Integrated with 150 m conforming to IEC 61800-3 category C3
IP degree of protection	IP21 conforming to IEC 61800-5-1 IP21 conforming to IEC 60529
[Us] rated supply voltage	380...440 V
Type of cooling	Forced convection
Supply frequency	50...60 Hz - 5...5 %
[Us] rated supply voltage	380...440 V - 15...10 %
Motor power kW	160 KW (normal duty) 132 kW (heavy duty)
Line current	251 A at 400 V (normal duty) 210 A at 400 V (heavy duty) 291 A at 380 V (normal duty) 244 A at 380 V (heavy duty)
Prospective line Isc	50 kA
Apparent power	191 KVA at 440 V (normal duty) 160 kVA at 440 V (heavy duty)
Continuous output current	302 A at 2.5 kHz for normal duty 250 A at 2.5 kHz for heavy duty
Asynchronous motor control profile	Constant torque standard Variable torque standard Optimized torque mode
Synchronous motor control profile	Permanent magnet motor Synchronous reluctance motor
Speed drive output frequency	0.1...500 Hz
Nominal switching frequency	2.5 kHz
Switching frequency	2.5...8 kHz with derating factor 2...8 kHz adjustable
Safety function	STO (safe torque off) SIL 3
Discrete input logic	16 preset speeds

The information provided in this documentation contains general descriptions and/or technical characteristics of the products contained herein. 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. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric Industries SAS nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein.

Communication port protocol	Ethernet Modbus TCP Modbus serial
Option card	Slot A: communication module, Profibus DP V1 Slot A: communication module, PROFINET Slot A: communication module, DeviceNet Slot A: communication module, Modbus TCP/EtherNet/IP Slot A: communication module, CANopen daisy chain RJ45 Slot A: communication module, CANopen SUB-D 9 Slot A: communication module, CANopen screw terminals Slot A/slot B: digital and analog I/O extension module Slot A/slot B: output relay extension module Slot A: communication module, Ethernet IP/Modbus TCP/MD-Link Communication module, BACnet MS/TP Communication module, Ethernet Powerlink

Complementary

Mounting mode	Floor-standing
Maximum transient current	332 A during 60 s (normal duty) 375 A during 60 s (heavy duty)
Network number of phases	3 phases
Discrete output number	0
Discrete output type	Relay outputs R1A, R1B, R1C 250 V AC 3000 mA Relay outputs R1A, R1B, R1C 30 V DC 3000 mA Relay outputs R2A, R2C 250 V AC 5000 mA Relay outputs R2A, R2C 30 V DC 5000 mA Relay outputs R3A, R3C 250 V AC 5000 mA Relay outputs R3A, R3C 30 V DC 5000 mA
Output voltage	$\leq$ power supply voltage
Permissible temporary current boost	1.1 x I_n during 60 s (normal duty) 1.5 x I_n during 60 s (heavy duty)
Motor slip compensation	Adjustable Can be suppressed Not available in permanent magnet motor law Automatic whatever the load
Acceleration and deceleration ramps	Linear adjustable separately from 0.01...9999 s
Physical interface	Ethernet 2-wire RS 485
Braking to standstill	By DC injection
Protection type	Thermal protection: motor Safe torque off: motor Motor phase break: motor Thermal protection: drive Safe torque off: drive Overheating: drive Overcurrent between output phases and earth: drive Overload of output voltage: drive Short-circuit protection: drive Motor phase break: drive Overvoltages on the DC bus: drive Line supply overvoltage: drive Line supply undervoltage: drive Line supply phase loss: drive Overspeed: drive Break on the control circuit: drive
Transmission rate	10, 100 Mbits 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps
Frequency resolution	Display unit: 0.1 Hz Analog input: 0.012/50 Hz
Transmission frame	RTU

Electrical connection	Control: removable screw terminals 0.5...1.5 mm ² Line side: M12 bar - 1 cables 3 x 185 mm ² maximum per phase (normal duty) Line side: M12 bar - 2 cables 3 x 120 mm ² maximum per phase (normal duty) Motor: M12 bar - 2 cables 3 x 185 mm ² maximum per phase (normal duty) Line side: M12 bar - 2 cables 3 x 70 mm ² minimum per phase (heavy duty) Line side: M12 bar - 1 cables 3 x 185 mm ² maximum per phase (heavy duty) Line side: M12 bar - 2 cables 3 x 120 mm ² maximum per phase (heavy duty) Motor: M12 bar - 2 cables 3 x 185 mm ² maximum per phase (heavy duty) Line side: M12 bar - 1 cables 3 x 185 mm ² minimum per phase (normal duty) Line side: M12 bar - 1 cables 3 x 185 mm ² minimum per phase (heavy duty) Line side: M12 bar - 2 cables 3 x 95 mm ² minimum per phase (normal duty) Motor: M12 bar - 1 cables 3 x 185 mm ² minimum per phase (normal duty) Motor: M12 bar - 2 cables 3 x 95 mm ² minimum per phase (normal duty) Motor: M12 bar - 1 cables 3 x 150 mm ² minimum per phase (heavy duty) Motor: M12 bar - 2 cables 3 x 70 mm ² minimum per phase (heavy duty)
Connector type	RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP RJ45 (on the remote graphic terminal) for Modbus serial
Data format	8 bits, configurable odd, even or no parity
Type of polarization	No impedance
Exchange mode	Half duplex, full duplex, autonegotiation Ethernet/Modbus TCP
Number of addresses	1...247 for Modbus serial
Method of access	Slave Modbus TCP
Supply	External supply for digital inputs: 24 V DC (19...30 V), <1.25 mA, protection type: overload and short-circuit protection 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 for digital inputs and STO: 24 V DC (21...27 V), <200 mA, protection type: overload and short-circuit protection
Local signalling	3 LEDs for local diagnostic 3 LEDs (dual colour) for embedded communication status 4 LEDs (dual colour) for communication module status 1 LED (red) for presence of voltage
Width	400 mm
Height	2150 mm
Depth	605 mm
Product weight	310 kg
Analogue input number	3
Analogue input type	AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 31.5 kOhm, resolution 12 bits AI1, AI2, AI3 software-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 12 bits AI2 voltage analog input: - 10...10 V DC, impedance: 31.5 kOhm, resolution 12 bits
Discrete input number	8
Discrete input type	DI7, DI8 programmable as pulse input: 0...30 kHz, 24 V DC (<= 30 V)
Input compatibility	DI1...DI6: discrete input level 1 PLC conforming to IEC 61131-2 DI5, DI6: discrete input level 1 PLC conforming to IEC 65A-68 STOA, STOB: discrete input level 1 PLC conforming to IEC 61131-2
Discrete input logic	Positive logic (source) (DI1...DI8), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (DI1...DI8), > 16 V (state 0), < 10 V (state 1)
Analogue output number	2
Analogue output type	Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AQ1, AQ2: 0...20 mA, resolution 10 bits Software-configurable current DQ-, DQ+: 30 V DC Software-configurable current DQ-, DQ+: 100 mA
Sampling duration	2 Ms +/- 0.5 ms (DI1...DI4) - discrete input 5 Ms +/- 1 ms (DI5, DI6) - discrete input 5 Ms +/- 0.1 ms (AI1, AI2, AI3) - analog input 10 ms +/- 1 ms (AO1) - analog output
Accuracy	+/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input +/- 1 % AO1, AO2 for a temperature variation 60 °C analog output
Linearity error	AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input AO1, AO2: +/- 0.2 % for analog output
Relay output number	3
Relay output type	Configurable relay logic R1: fault relay NO/NC electrical durability 100000 cycles Configurable relay logic R2: sequence relay NO electrical durability 100000 cycles Configurable relay logic R3: sequence relay NO electrical durability 100000 cycles

Refresh time	Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)
Minimum switching current	Relay output R1, R2, R3: 5 mA at 24 V DC
Maximum switching current	Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 250 V AC Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 30 V DC Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC
Isolation	Between power and control terminals
Maximum output frequency	500 kHz
Maximum input current	291.0 A
Variable speed drive application selection	Building - HVAC compressor centrifugal Food and beverage processing other application Mining mineral and metal fan Mining mineral and metal pump Oil and gas fan Water and waste water other application Building - HVAC screw compressor Food and beverage processing pump Food and beverage processing fan Food and beverage processing atomization Oil and gas electro submersible pump (ESP) Oil and gas water injection pump Oil and gas jet fuel pump Oil and gas compressor for refinery Water and waste water centrifuge pump Water and waste water positive displacement pump Water and waste water electro submersible pump (ESP) Water and waste water screw pump Water and waste water lobe compressor Water and waste water screw compressor Water and waste water compressor centrifugal Water and waste water fan Water and waste water conveyor Water and waste water mixer
Motor power range AC-3	110...220 kW at 380...440 V 3 phases
Quantity per set	1
Enclosure mounting	Floor-standing

Environment

Insulation resistance	> 1 MOhm 500 V DC for 1 minute to earth
Noise level	69 dB conforming to 86/188/EEC
Power dissipation in W	3120 W, switching frequency 2.5 kHz (normal duty) 4030 W, switching frequency 2.5 kHz (heavy duty)
Volume of cooling air	720 m3/h
Operating position	Vertical +/- 10 degree
Maximum THDI	<48 % full load conforming to IEC 61000-3-12
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
Pollution degree	2 conforming to IEC 61800-5-1
Vibration resistance	1.5 mm peak to peak (f= 2...13 Hz) conforming to IEC 60068-2-6 1 gn (f= 13...200 Hz) conforming to IEC 60068-2-6
Shock resistance	15 gn for 11 ms conforming to IEC 60068-2-27
Relative humidity	5...95 % without condensation conforming to IEC 60068-2-3
Ambient air temperature for operation	-15...40 °C (without derating) 40...50 °C (with derating factor)
Ambient air temperature for storage	-40...70 °C
Operating altitude	<= 1000 m without derating 1000...4800 m with current derating 1 % per 100 m
Product certifications	ATEX[RETURN]EAC[RETURN]C-Tick
Marking	CE

Standards	IEC 60204-1 IEC 61800-2 IEC 61800-3 IEC 61800-5-1
Overvoltage category	III
Regulation loop	Adjustable PID regulator
Noise level	69 dB
Pollution degree	2

Offer Sustainability

REACH Regulation	 REACH Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope)
Mercury free	Yes
RoHS exemption information	 Yes
China RoHS Regulation	 China RoHS Declaration
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins