

# ATV630U30N4

variable speed drive ATV630 - 3kW - 380...480V - IP21/UL type 1



## 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<br>Synchronous motors                                                                                                                                                                                     |
| Mounting mode                      | Wall mount                                                                                                                                                                                                                    |
| EMC filter                         | Integrated EN/IEC 61800-3 category C2 50 m<br>Integrated EN/IEC 61800-3 category C3 150 m                                                                                                                                     |
| IP degree of protection            | IP21 conforming to IEC 61800-5-1<br>IP21 conforming to IEC 60529                                                                                                                                                              |
| Degree of protection               | UL type 1 UL 508C                                                                                                                                                                                                             |
| Type of cooling                    | Forced convection                                                                                                                                                                                                             |
| Supply frequency                   | 50...60 Hz - 5...5 %                                                                                                                                                                                                          |
| Network number of phases           | 3 phases                                                                                                                                                                                                                      |
| [Us] rated supply voltage          | 380...480 V - 15...10 %                                                                                                                                                                                                       |
| Motor power kW                     | 3 kW normal duty<br>2.2 kW heavy duty                                                                                                                                                                                         |
| Motor power hp                     | 3 hp heavy duty<br>4 hp normal duty                                                                                                                                                                                           |
| Line current                       | 5.8 A 380 V normal duty<br>5.1 A 480 V normal duty<br>4.5 A 380 V heavy duty<br>4 A 480 V heavy duty                                                                                                                          |
| Prospective line Isc               | 50 kA                                                                                                                                                                                                                         |
| Apparent power                     | 4.2 kVA 480 V normal duty<br>3.3 kVA 480 V heavy duty                                                                                                                                                                         |
| Continuous output current          | 7.2 A 4 kHz normal duty<br>5.6 A 4 kHz heavy duty                                                                                                                                                                             |
| Maximum transient current          | 8.4 A 60 s heavy duty<br>7.9 A 60 s normal duty                                                                                                                                                                               |
| Asynchronous motor control profile | Constant torque standard<br>Variable torque standard<br>Optimized torque mode                                                                                                                                                 |
| Synchronous motor control profile  | Permanent magnet motor                                                                                                                                                                                                        |
| Output frequency                   | 0.0001...0.5 kHz                                                                                                                                                                                                              |
| Speed drive output frequency       | 0.1...599 Hz                                                                                                                                                                                                                  |
| Nominal switching frequency        | 4 kHz                                                                                                                                                                                                                         |
| Switching frequency                | 2...12 kHz adjustable<br>4...12 kHz with derating factor                                                                                                                                                                      |
| Safety function                    | STO (safe torque off) SIL 3                                                                                                                                                                                                   |
| Discrete input logic               | 16 preset speeds                                                                                                                                                                                                              |
| Communication port protocol        | Ethernet<br>Modbus serial<br>Modbus TCP                                                                                                                                                                                       |
| Option card                        | Communication module Profibus DP V1 slot A<br>Communication module Profinet slot A<br>Communication module DeviceNet slot A<br>Communication module Modbus TCP/EtherNet/IP slot A<br>Communication module CANopen daisy chain |

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RJ45 slot A  
Communication module CANopen SUB-D 9 slot A  
Communication module CANopen screw terminals slot A  
Digital and analog I/O extension module slot A/slot B  
Output relay extension module slot A/slot B  
Communication module Ethernet IP/Modbus  
TCP/MD-Link slot A

## Complementary

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| Output voltage                      | <= power supply voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Permissible temporary current boost | 1.1 x I <sub>n</sub> 60 s normal duty<br>1.5 x I <sub>n</sub> 60 s heavy duty                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Motor slip compensation             | Adjustable<br>Automatic whatever the load<br>Can be suppressed<br>Not available in permanent magnet motor law                                                                                                                                                                                                                                                                                                                                                                                                |
| Acceleration and deceleration ramps | Linear adjustable separately from 0.01...9999 s                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Braking to standstill               | By DC injection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Protection type                     | Line supply overvoltage drive<br>Line supply phase loss drive<br>Line supply undervoltage drive<br>Overcurrent between output phases and earth drive<br>Thermal protection motor<br>Thermal protection drive<br>Safe torque off motor<br>Motor phase break motor<br>Safe torque off drive<br>Overheating drive<br>Short-circuit protection drive<br>Motor phase break drive<br>Overspeed drive<br>Break on the control circuit drive<br>Overvoltages on the DC bus drive<br>Overload of output voltage drive |
| Frequency resolution                | Display unit<br>Analog input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Electrical connection               | Removable screw terminals 0.5...1.5 mm <sup>2</sup> AWG 20...AWG 16 control<br>Screw terminal 2.5...6 mm <sup>2</sup> AWG 14...AWG 10 motor<br>Screw terminal 2.5...6 mm <sup>2</sup> AWG 14...AWG 10 line side                                                                                                                                                                                                                                                                                              |
| Connector type                      | RJ45 Ethernet/Modbus TCP on the remote graphic terminal<br>RJ45 Modbus serial on the remote graphic terminal                                                                                                                                                                                                                                                                                                                                                                                                 |
| Physical interface                  | 2-wire RS 485 Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Transmission frame                  | RTU Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Transmission rate                   | 10/100 Mbit/s Ethernet IP/Modbus TCP<br>4.8, 9.6, 19.2, 38.4 kbit/s Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Exchange mode                       | Half duplex, full duplex, autonegotiation Ethernet/Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Data format                         | 8 bits, configurable odd, even or no parity Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type of polarization                | No impedance Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Number of addresses                 | 1...247 Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Method of access                    | Slave Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Supply                              | Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 % <= 10 mA overload and short-circuit protection<br>External supply for digital inputs 24 V DC 19...30 V <= 1.25 mA overload and short-circuit protection<br>Internal supply for digital inputs and STO 24 V DC 21...27 V <= 200 mA overload and short-circuit protection                                                                                                                                                         |
| Local signalling                    | 3 LEDs local diagnostic<br>3 LEDs dual colour embedded communication status<br>4 LEDs dual colour communication module status<br>1 LED red presence of voltage                                                                                                                                                                                                                                                                                                                                               |
| Width                               | 144 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Height                              | 350 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Depth                               | 203 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Product weight                      | 4.6 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Analogue input number               | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| Analogue input type                | Software-configurable voltage AI1, AI2, AI3 0...10 V DC 30 kOhm 12 bits<br>Software-configurable current AI1, AI2, AI3 0...20 mA/4...20 mA 250 Ohm 12 bits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Discrete input number              | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Discrete input type                | Programmable DI1...DI6 24 V DC 3.5 kOhm<br>Programmable as pulse input DI5, DI6 0...30 kHz 24 V DC<br>Safe torque off STOA, STOB 24 V DC > 2.2 kOhm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Input compatibility                | Level 1 PLC EN/IEC 61131-2 DI1...DI6 discrete input<br>Level 1 PLC IEC 65A-68 DI5, DI6 discrete input<br>Level 1 PLC EN/IEC 61131-2 STOA, STOB discrete input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Discrete input logic               | Positive logic (source) DI1...DI6 < 5 V > 11 V<br>Negative logic (sink) DI1...DI6 > 16 V < 10 V<br>Positive logic (source) DI5, DI6 < 0.6 V > 2.5 V<br>Positive logic (source) STOA, STOB < 5 V > 11 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Analogue output number             | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Analogue output type               | Software-configurable voltage AO1, AO2 0...10 V DC 470 Ohm 10 bits<br>Software-configurable current AO1, AO2 0...20 mA 10 bits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Sampling duration                  | 2 ms +/- 0.5 ms DI1...DI4 discrete input<br>5 ms +/- 1 ms DI5, DI6 discrete input<br>5 ms +/- 0.1 ms AI1, AI2, AI3 analog input<br>10 ms +/- 1 ms AO1 analog output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Accuracy                           | +/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input<br>+/- 1 % AO1, AO2 for a temperature variation 60 °C analog output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Linearity error                    | +/- 0.15 % of maximum value analog input AI1, AI2, AI3<br>+/- 0.2 % analog output AO1, AO2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Relay output number                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Relay output type                  | Configurable relay logic R1 fault relay NO/NC 100000 cycles<br>Configurable relay logic R2 sequence relay NO 100000 cycles<br>Configurable relay logic R3 sequence relay NO 100000 cycles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Refresh time                       | 5 ms +/- 0.5 ms R1, R2, R3 relay output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Minimum switching current          | 5 mA 24 V DC R1, R2, R3 relay output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Maximum switching current          | 3 A 250 V AC resistive 1 R1, R2, R3 relay output<br>3 A 30 V DC resistive 1 R1, R2, R3 relay output<br>2 A 250 V AC inductive 0.4 7 ms R1, R2, R3 relay output<br>2 A 30 V DC inductive 0.4 7 ms R1, R2, R3 relay output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Isolation                          | Between power and control terminals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Specific application               | Utility                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| IP degree of protection            | IP21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Discrete and process manufacturing | Building - HVAC compressor centrifugal<br>Food and beverage processing other application<br>Mining mineral and metal fan<br>Mining mineral and metal pump<br>Oil and gas fan<br>Water and waste water other application<br>Building - HVAC screw compressor<br>Food and beverage processing pump<br>Food and beverage processing fan<br>Food and beverage processing atomization<br>Oil and gas electro submersible pump (ESP)<br>Oil and gas water injection pump<br>Oil and gas jet fuel pump<br>Oil and gas compressor for refinery<br>Water and waste water centrifuge pump<br>Water and waste water positive displacement pump<br>Water and waste water electro submersible pump (ESP)<br>Water and waste water screw pump<br>Water and waste water lobe compressor<br>Water and waste water screw compressor<br>Water and waste water compressor centrifugal<br>Water and waste water fan<br>Water and waste water conveyor<br>Water and waste water mixer |
| Power range                        | 2.2...3 kW 380...440 V 3 phases<br>2.2...3 kW 480...500 V 3 phases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Motor starter type                 | Variable speed drive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## Environment

|                       |                                         |
|-----------------------|-----------------------------------------|
| insulation resistance | > 1 mOhm 500 V DC for 1 minute to earth |
| noise level           | 54.5 dB 86/188/EEC                      |

|                                       |                                                                                                                                                                                                                                                                                                                                                            |
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| power dissipation in W                | 31 W natural convection 380 V 4 kHz<br>78 W forced convection 380 V 4 kHz                                                                                                                                                                                                                                                                                  |
| volume of cooling air                 | 38 m3/h                                                                                                                                                                                                                                                                                                                                                    |
| operating position                    | Vertical +/- 10 degree                                                                                                                                                                                                                                                                                                                                     |
| THDI                                  | <= 48 % full load IEC 61000-3-12                                                                                                                                                                                                                                                                                                                           |
| electromagnetic compatibility         | 1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5<br>Electrical fast transient/burst immunity test level 4 IEC 61000-4-4<br>Electrostatic discharge immunity test level 3 IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3<br>Conducted radio-frequency immunity test level 3 IEC 61000-4-6 |
| pollution degree                      | 2 EN/IEC 61800-5-1                                                                                                                                                                                                                                                                                                                                         |
| vibration resistance                  | 1.5 mm peak to peak 2...13 Hz IEC 60068-2-6<br>1 gn 13...200 Hz IEC 60068-2-6                                                                                                                                                                                                                                                                              |
| shock resistance                      | 15 gn 11 ms IEC 60068-2-27                                                                                                                                                                                                                                                                                                                                 |
| relative humidity                     | 5...95 % without condensation IEC 60068-2-3                                                                                                                                                                                                                                                                                                                |
| ambient air temperature for operation | 50...60 °C with derating factor<br>-15...50 °C without derating                                                                                                                                                                                                                                                                                            |
| ambient air temperature for storage   | -40...70 °C                                                                                                                                                                                                                                                                                                                                                |
| operating altitude                    | <= 1000 m without derating<br>1000...4800 m with current derating 1 % per 100 m                                                                                                                                                                                                                                                                            |
| environmental characteristic          | Chemical pollution resistance class 3C3 EN/IEC 60721-3-3<br>Dust pollution resistance class 3S3 EN/IEC 60721-3-3                                                                                                                                                                                                                                           |
| standards                             | EN/IEC 61800-3<br>EN/IEC 61800-3 environment 1 category C2<br>EN/IEC 61800-3 environment 2 category C3<br>UL 508C<br>EN/IEC 61800-5-1<br>IEC 61000-3-12<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1                                                                                                                                                         |
| product certifications                | ATEX INERIS<br>ATEX zone 2/22<br>CSA<br>TÜV<br>UL<br>REACH<br>DNV-GL                                                                                                                                                                                                                                                                                       |
| marking                               | CE                                                                                                                                                                                                                                                                                                                                                         |

## Offer Sustainability

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|----------------------------------|-----------------------------------------------------------------------|
| Sustainable offer status         | Green Premium product                                                 |
| RoHS (date code: YYWW)           | Compliant - since 1444 - Schneider Electric declaration of conformity |
| REACH                            | Reference not containing SVHC above the threshold                     |
| Product environmental profile    | Available                                                             |
| Product end of life instructions | Available                                                             |