

# ATV630D55N4

variable speed drive ATV630 - 55kW/75HP -  
380...480V - IP21/UL type 1



## Main

|                                    |                                                                                                                                                                                                                                                                                                                           |
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| 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 conforming to EN/IEC 61800-3 category C3 with 150 m motor cable maxi                                                                                                                                                                                                                                           |
| IP degree of protection            | IP21 conforming to IEC 61800-5-1<br>IP21 conforming to IEC 60529                                                                                                                                                                                                                                                          |
| Degree of protection               | UL type 1 conforming to 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                     | 55 kW (normal duty)<br>45 kW (heavy duty)                                                                                                                                                                                                                                                                                 |
| Motor power hp                     | 75 hp (normal duty)<br>60 hp (heavy duty)                                                                                                                                                                                                                                                                                 |
| Line current                       | 97.2 A at 380 V (normal duty)<br>84.2 A at 480 V (normal duty)<br>81.4 A at 380 V (heavy duty)<br>71.8 A at 480 V (heavy duty)                                                                                                                                                                                            |
| Prospective line Isc               | 50 kA                                                                                                                                                                                                                                                                                                                     |
| Apparent power                     | 70 kVA at 480 V (normal duty)<br>59.7 kVA at 480 V (heavy duty)                                                                                                                                                                                                                                                           |
| Continuous output current          | 106 A at 2.5 kHz (normal duty)<br>88 A at 2.5 kHz (heavy duty)                                                                                                                                                                                                                                                            |
| Maximum transient current          | 116.6 A during 60 s (normal duty)<br>132 A during 60 s (heavy 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                                                                                                                                                                                                                                                                                                          |
| Nominal switching frequency        | 2.5 kHz                                                                                                                                                                                                                                                                                                                   |
| Switching frequency                | 2...8 kHz adjustable<br>2.5...8 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                        | Slot A : communication module for Profibus DP V1<br>Slot A : communication module for Profinet<br>Slot A : communication module for DeviceNet<br>Slot A : communication module for Modbus TCP/EtherNet/IP<br>Slot A : communication module for CANopen daisy chain RJ45<br>Slot A : communication module for CANopen SUB- |

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Slot A : communication module for 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 for Ethernet IP/Modbus TCP/MD-Link

## Complementary

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| Output voltage                      | <= power supply voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Permissible temporary current boost | 1.1 x In for 60 s (normal duty)<br>1.5 x In for 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 to 9000 s<br>S, U or customized                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Braking to standstill               | By DC injection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Protection type                     | Motor : thermal protection<br>Motor : safe torque off<br>Motor : motor phase break<br>Drive : thermal protection<br>Drive : safe torque off<br>Drive : overheating<br>Drive : overcurrent between output phases and earth<br>Drive : overload of output voltage<br>Drive : short-circuit protection<br>Drive : motor phase break<br>Drive : overvoltages on the DC bus<br>Drive : line supply overvoltage<br>Drive : line supply undervoltage<br>Drive : line supply phase loss<br>Drive : overspeed<br>Drive : break on the control circuit |
| Frequency resolution                | Display unit : 0.1 Hz<br>Analog input : 0.012/50 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Electrical connection               | Control : removable screw terminals 0.5...1.5 mm <sup>2</sup> (AWG 20...AWG 16)<br>Line side : screw terminal 70...120 mm <sup>2</sup> (AWG 1/0...250 kcmil)<br>Motor : screw terminal 70...120 mm <sup>2</sup> (AWG 1/0...250 kcmil)                                                                                                                                                                                                                                                                                                        |
| Type of connector                   | RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP<br>RJ45 (on the remote graphic terminal) for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Physical interface                  | 2-wire RS 485 for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Transmission frame                  | RTU for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Transmission rate                   | 10/100 Mbit/s for Ethernet IP/Modbus TCP<br>4.8, 9.6, 19.2, 38.4 kbit/s for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Exchange mode                       | Half duplex, full duplex, autonegotiation for Ethernet/Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Data format                         | 8 bits, configurable odd, even or no parity for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Type of polarization                | No impedance for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Number of addresses                 | 1...247 for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Method of access                    | Slave for Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Supply                              | External supply for digital inputs : 24 V DC (19...30 V) current <= 1.25 mA (overload and short-circuit protection)<br>Internal supply for reference potentiometer (1 to 10 kOhm) : 10.5 V DC +/- 5 % current <= 10 mA (overload and short-circuit protection)<br>Internal supply for digital inputs and STO : 24 V DC (21...27 V) current <= 200 mA (overload and short-circuit protection)                                                                                                                                                 |
| Local signalling                    | 3 LEDs for local diagnostic<br>3 LEDs dual colour for embedded communication status<br>4 LEDs dual colour for communication module status<br>1 LED red for presence of voltage                                                                                                                                                                                                                                                                                                                                                               |
| Width                               | 290 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Height                              | 922 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Depth                               | 323 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Product weight                      | 56.5 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Analogue input number               | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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| Analogue input type       | Software-configurable voltage AI1, AI2, AI3 : 0...10 V DC impedance 30 kOhm, resolution 12 bits<br>Software-configurable current AI1, AI2, AI3 : 0...20 mA impedance 250 Ohm, resolution 12 bits                                                                                                                                                 |
| Discrete input number     | 8                                                                                                                                                                                                                                                                                                                                                |
| Discrete input type       | Programmable DI1...DI6 : 24 V DC <= 30 V impedance 3.5 kOhm<br>Programmable as pulse input DI5, DI6 0...30 kHz : 24 V DC <= 30 V<br>Safe torque off STOA, STOB : 24 V DC <= 30 V impedance > 2.2 kOhm                                                                                                                                            |
| Input compatibility       | Discrete input DI1...DI6 : level 1 PLC conforming to EN/IEC 61131-2<br>Discrete input DI5, DI6 : level 1 PLC conforming to IEC 65A-68<br>Discrete input STOA, STOB : level 1 PLC conforming to EN/IEC 61131-2                                                                                                                                    |
| Discrete input logic      | DI1...DI6, positive logic (source) : , < 5 V (state 0), > 11 V (state 1)<br>DI1...DI6, negative logic (sink) : , > 16 V (state 0), < 10 V (state 1)<br>DI5, DI6, positive logic (source) : , < 0.6 V (state 0), > 2.5 V (state 1)<br>STOA, STOB, positive logic (source) : , < 5 V (state 0), > 11 V (state 1)                                   |
| Analogue output number    | 2                                                                                                                                                                                                                                                                                                                                                |
| Analogue output type      | Software-configurable current AO1, AO2 : 0...20 mA, resolution 10 bits<br>Software-configurable voltage AO1, AO2 : 0...10 V DC impedance 470 Ohm, resolution 10 bits                                                                                                                                                                             |
| Sampling duration         | Discrete input DI1...DI4 : 2 ms (+/- 0.5 ms)<br>Discrete input DI5, DI6 : 5 ms (+/- 1 ms)<br>Analog input AI1, AI2, AI3 : 5 ms (+/- 0.1 ms)<br>Analog output AO1 : 10 ms (+/- 1 ms)                                                                                                                                                              |
| Accuracy                  | Analog input AI1, AI2, AI3 : +/- 0.6 % for a temperature variation 60 °C<br>Analog output AO1, AO2 : +/- 1 % for a temperature variation 60 °C                                                                                                                                                                                                   |
| Linearity error           | Analog input AI1, AI2, AI3 : +/- 0.15 % of maximum value<br>Analog output AO1, AO2 : +/- 0.2 %                                                                                                                                                                                                                                                   |
| Relay output number       | 3                                                                                                                                                                                                                                                                                                                                                |
| Relay output type         | Configurable relay logic R1 : fault relay NO/NC electrical durability 100000 cycles<br>Configurable relay logic R2 : sequence relay NO electrical durability 100000 cycles<br>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 inductive load (cos phi = 0.4 and L/R = 7 ms) : 2 A at 250 V AC<br>Relay output R1, R2, R3 on inductive load (cos phi = 0.4 and L/R = 7 ms) : 2 A at 30 V DC<br>Relay output R1, R2, R3 on resistive load (cos phi = 1) : 3 A at 250 V AC<br>Relay output R1, R2, R3 on resistive load (cos phi = 1) : 3 A at 30 V DC |
| Isolation                 | Between power and control terminals                                                                                                                                                                                                                                                                                                              |
| Functionality             | Full                                                                                                                                                                                                                                                                                                                                             |
| Specific application      | Centrifugal pumps and fans                                                                                                                                                                                                                                                                                                                       |
| IP degree of protection   | IP21                                                                                                                                                                                                                                                                                                                                             |

## Environment

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| insulation resistance                 | > 1 mOhm at 500 V DC for 1 minute to earth                                                                                                                                                                                                                                                                                                                                                                                       |
| noise level                           | 62.4 dB conforming to 86/188/EEC                                                                                                                                                                                                                                                                                                                                                                                                 |
| power dissipation in W                | 131 W (natural convection) at 380 V switching frequency 2.5 kHz<br>917 W (forced convection) at 380 V switching frequency 2.5 kHz                                                                                                                                                                                                                                                                                                |
| volume of cooling air                 | 295 m3/h                                                                                                                                                                                                                                                                                                                                                                                                                         |
| operating position                    | Vertical +/- 10 degree                                                                                                                                                                                                                                                                                                                                                                                                           |
| THDI                                  | <= 48 % from 80...100 % of load conforming to IEC 61000-3-12                                                                                                                                                                                                                                                                                                                                                                     |
| electromagnetic compatibility         | Conducted radio-frequency immunity test conforming to IEC 61000-4-6 level 3<br>Electrical fast transient/burst immunity test conforming to IEC 61000-4-4 level 4<br>Electrostatic discharge immunity test conforming to IEC 61000-4-2 level 3<br>Radiated radio-frequency electromagnetic field immunity test conforming to IEC 61000-4-3 level 3<br>1.2/50 µs - 8/20 µs surge immunity test conforming to IEC 61000-4-5 level 3 |
| pollution degree                      | 2 conforming to EN/IEC 61800-5-1                                                                                                                                                                                                                                                                                                                                                                                                 |
| vibration resistance                  | 1 gn (f = 13...200 Hz) conforming to IEC 60068-2-6<br>1.5 mm peak to peak (f = 2...13 Hz) conforming to IEC 60068-2-6                                                                                                                                                                                                                                                                                                            |
| shock resistance                      | 15 gn during 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 | 50...60 °C with derating factor<br>-15...50 °C without derating                                                                                                                                                                                                                                                                                                                                                                  |

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| 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 1426 - Schneider Electric declaration of conformity |
| REACH                            | Reference contains SVHC above the threshold                           |
| Product environmental profile    | Available                                                             |
| Product end of life instructions | Available                                                             |