

# ATV930D75Y6428

variable speed drive, Altivar Process ATV900,  
ATV930, 75hp, 400 to 480V, with braking unit,  
IP21



## Main

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| Range of product                   | Altivar Process ATV900                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Device application                 | Industrial application                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Product or component type          | Variable speed drive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Product destination                | Asynchronous motors<br>Synchronous motors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Product specific application       | Process for industrial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Variant                            | With braking chopper<br>Standard version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Network number of phases           | 3 phases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Mounting mode                      | Wall mount                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Communication port protocol        | EtherNet/IP<br>Modbus TCP<br>Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| [Us] rated supply voltage          | 380...480 V - 15...10 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Motor power kW                     | 55.0 KW for normal duty<br>45.0 kW for heavy duty                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Continuous output current          | 106 A at 2.5 kHz for normal duty<br>88 A at 2.5 kHz for heavy duty                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| EMC filter                         | Integrated<br>With EMC plate option                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| IP degree of protection            | IP21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Option module                      | 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 EtherCAT<br>Slot A: communication module for CANopen daisy chain RJ45<br>Slot A: communication module for CANopen SUB-D 9<br>Slot A: communication module for CANopen screw terminals<br>Slot A/slot B/slot C: digital and analog I/O extension module<br>Slot A/slot B/slot C: output relay extension module<br>Slot B: 5/12 V digital encoder interface module<br>Slot B: analog encoder interface module<br>Slot B: resolver encoder interface module<br>Communication module for Ethernet Powerlink |
| Discrete input logic               | 16 preset speeds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Asynchronous motor control profile | Constant torque standard<br>Optimized torque mode<br>Variable torque standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Synchronous motor control profile  | Permanent magnet motor<br>Synchronous reluctance motor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Maximum output frequency           | 599 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Switching frequency                | 1...8 kHz adjustable<br>2.5...8 kHz with derating factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Nominal switching frequency        | 2.5 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Apparent power                     | 70 KVA at 480 V (normal duty)<br>59.7 kVA at 480 V (heavy duty)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Maximum transient current          | 127.2 A during 60 s (normal duty)<br>132 A during 60 s (heavy duty)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Network frequency                  | 50...60 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Prospective line I <sub>sc</sub>   | 50 kA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## Complementary

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| Discrete input number                                | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Discrete input type                                  | DI1...DI8 programmable, 24 V DC ( $\leq 30$ V), impedance: 3.5 kOhm<br>DI7, DI8 programmable as pulse input: 0...30 kHz, 24 V DC ( $\leq 30$ V)<br>STOA, STOB safe torque off, 24 V DC ( $\leq 30$ V), impedance: $> 2.2$ kOhm                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Discrete output number                               | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Discrete output type                                 | Logic output DQ+ 0...1 kHz $\leq 30$ V DC 100 mA<br>Programmable as pulse output DQ+ 0...30 kHz $\leq 30$ V DC 20 mA<br>Logic output DQ- 0...1 kHz $\leq 30$ V DC 100 mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Analogue input number                                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Analogue input type                                  | AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 30 kOhm, resolution 12 bits<br>AI1, AI2, AI3 software-configurable current: 0...20 mA/4...20 mA, impedance: 250 Ohm, resolution 12 bits                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Analogue output number                               | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Analogue output type                                 | Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits<br>Software-configurable current AQ1, AQ2: 0...20 mA impedance 500 Ohm, resolution 10 bits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 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 1000000 cycles<br>Configurable relay logic R3: sequence relay NO electrical durability 1000000 cycles                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Maximum switching current                            | Relay output R1 on resistive load, $\cos \phi = 1$ : 3 A at 250 V AC<br>Relay output R1 on resistive load, $\cos \phi = 1$ : 3 A at 30 V DC<br>Relay output R1 on inductive load, $\cos \phi = 0.4$ and $L/R = 7$ ms: 2 A at 250 V AC<br>Relay output R1 on inductive load, $\cos \phi = 0.4$ and $L/R = 7$ ms: 2 A at 30 V DC<br>Relay output R2, R3 on resistive load, $\cos \phi = 1$ : 5 A at 250 V AC<br>Relay output R2, R3 on resistive load, $\cos \phi = 1$ : 5 A at 30 V DC<br>Relay output R2, R3 on inductive load, $\cos \phi = 0.4$ and $L/R = 7$ ms: 2 A at 250 V AC<br>Relay output R2, R3 on inductive load, $\cos \phi = 0.4$ and $L/R = 7$ ms: 2 A at 30 V DC |
| Minimum switching current                            | Relay output R1, R2, R3: 5 mA at 24 V DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Physical interface                                   | Ethernet<br>2-wire RS 485                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Connector type                                       | 2 RJ45<br>1 RJ45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Method of access                                     | Slave Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Transmission rate                                    | 10, 100 Mbits<br>4.8 kbps<br>9600 bit/s<br>19200 bit/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Transmission frame                                   | RTU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Number of addresses                                  | 1...247                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Data format                                          | 8 bits, configurable odd, even or no parity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Type of polarization                                 | No impedance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 4 quadrant operation possible                        | True                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Acceleration and deceleration ramps                  | Linear adjustable separately from 0.01...9999 s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Motor slip compensation                              | Automatic whatever the load<br>Not available in permanent magnet motor law<br>Can be suppressed<br>Adjustable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Braking to standstill                                | By DC injection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Brake chopper integrated                             | True                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Relative symmetric network frequency tolerance       | 5 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Power dissipation in W                               | Natural convection: 131 W at 380 V, switching frequency 2.5 kHz<br>Forced convection: 917 W at 380 V, switching frequency 2.5 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| With safety function Safely Limited Speed (SLS)      | True                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| With safety function Safe brake management (SBC/SBT) | True                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| With safety function Safe Operating Stop (SOS)       | False                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| With safety function Safe Position (SP)              | False                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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| With safety function Safe programmable logic       | False                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| With safety function Safe Speed Monitor (SSM)      | False                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| With safety function Safe Stop 1 (SS1)             | True                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| With sft fct Safe Stop 2 (SS2)                     | False                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| With safety function Safe torque off (STO)         | True                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| With safety function Safely Limited Position (SLP) | False                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| With safety function Safe Direction (SDI)          | False                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Protection type                                    | Thermal protection: motor<br>Safe torque off: motor<br>Motor phase break: motor<br>Thermal protection: drive<br>Safe torque off: drive<br>Overheating: drive<br>Overcurrent between output phases and earth: drive<br>Overload of output voltage: drive<br>Short-circuit protection: drive<br>Motor phase break: drive<br>Overvoltages on the DC bus: drive<br>Line supply overvoltage: drive<br>Line supply undervoltage: drive<br>Line supply phase loss: drive<br>Overspeed: drive<br>Break on the control circuit: drive |
| Quantity per set                                   | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Width                                              | 290 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Height                                             | 922 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Depth                                              | 325.5 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Net weight                                         | 57.5 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Electrical connection                              | Control: screw terminal 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<br>DC bus: screw terminal 70...120 mm <sup>2</sup> /AWG 1/0...250 kcmil                                                                                                                                                                                                                                 |
| 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 Ethernet IP/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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Supply                                             | External supply for digital inputs: 24 V DC (19...30 V), <1.25 mA, protection type: overload and short-circuit protection<br>Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection<br>Internal supply for digital inputs and STO: 24 V DC (21...27 V), <200 mA, protection type: overload and short-circuit protection                                                                                                               |
| Local signalling                                   | Local diagnostic: 3 LED (mono/dual colour)<br>Embedded communication status: 5 LED (dual colour)<br>Communication module status: 2 LED (dual colour)<br>Presence of voltage: 1 LED (red)                                                                                                                                                                                                                                                                                                                                     |
| Input compatibility                                | DI1...DI8: discrete input level 1 PLC conforming to IEC 61131-2<br>DI7, DI8: pulse input level 1 PLC conforming to IEC 65A-68<br>STOA, STOB: discrete input level 1 PLC conforming to IEC 61131-2                                                                                                                                                                                                                                                                                                                            |
| Discrete input logic                               | Positive logic (source) (DI1...DI8), < 5 V (state 0), > 11 V (state 1)<br>Negative logic (sink) (DI1...DI8), > 16 V (state 0), < 10 V (state 1)<br>Positive logic (source) (DI7, DI8), < 0.6 V (state 0), > 2.5 V (state 1)<br>Positive logic (source) (STOA, STOB), < 5 V (state 0), > 11 V (state 1)                                                                                                                                                                                                                       |
| Sampling duration                                  | 2 Ms +/- 0.5 ms (DI1...DI8) - discrete input<br>5 Ms +/- 1 ms (DI7, DI8) - pulse input<br>1 Ms +/- 1 ms (AI1, AI2, AI3) - analog input<br>5 ms +/- 1 ms (AQ1, AQ2) - analog output                                                                                                                                                                                                                                                                                                                                           |
| Accuracy                                           | +/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input<br>+/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output                                                                                                                                                                                                                                                                                                                                                                                   |
| Linearity error                                    | AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input<br>AQ1, AQ2: +/- 0.2 % for analog output                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Refresh time                                       | Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Isolation                                          | Between power and control terminals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## Environment

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| Operating altitude                                               | <= 1000 m without derating<br>1000...4800 m with current derating 1 % per 100 m                                                                                                                                                                                                                                                                                                                                                  |
| Operating position                                               | Vertical +/- 10 degree                                                                                                                                                                                                                                                                                                                                                                                                           |
| Product certifications                                           | CSA[RETURN]UL[RETURN]TÜV                                                                                                                                                                                                                                                                                                                                                                                                         |
| Marking                                                          | CE                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Standards                                                        | UL 508C<br>IEC 61800-3<br>IEC 61800-5-1<br>IEC 61000-3-12<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1                                                                                                                                                                                                                                                                                                                             |
| Maximum THDI                                                     | <48 % from 80...100 % of load conforming to IEC 61000-3-12                                                                                                                                                                                                                                                                                                                                                                       |
| Assembly style                                                   | Enclosed                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Electromagnetic compatibility                                    | Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3<br>Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4<br>1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5<br>Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6 |
| Environmental class (during operation)                           | Class 3C3 according to IEC 60721-3-3<br>Class 3S3 according to IEC 60721-3-3                                                                                                                                                                                                                                                                                                                                                     |
| Maximum acceleration under shock impact (during operation)       | 150 m/s <sup>2</sup> at 11 ms                                                                                                                                                                                                                                                                                                                                                                                                    |
| Maximum acceleration under vibrational stress (during operation) | 10 m/s <sup>2</sup> at 13...200 Hz                                                                                                                                                                                                                                                                                                                                                                                               |
| Maximum deflection under vibratory load (during operation)       | 1.5 mm at 2...13 Hz                                                                                                                                                                                                                                                                                                                                                                                                              |
| Permitted relative humidity (during operation)                   | Class 3K5 according to EN 60721-3                                                                                                                                                                                                                                                                                                                                                                                                |
| Volume of cooling air                                            | 295 m <sup>3</sup> /h                                                                                                                                                                                                                                                                                                                                                                                                            |
| Overvoltage category                                             | III                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regulation loop                                                  | Adjustable PID regulator                                                                                                                                                                                                                                                                                                                                                                                                         |
| Insulation resistance                                            | > 1 MOhm 500 V DC for 1 minute to earth                                                                                                                                                                                                                                                                                                                                                                                          |
| Noise level                                                      | 68.3 dB conforming to 86/188/EEC                                                                                                                                                                                                                                                                                                                                                                                                 |
| Vibration resistance                                             | 1.5 mm peak to peak (f= 2...13 Hz) conforming to IEC 60068-2-6<br>1 gn (f= 13...200 Hz) conforming to IEC 60068-2-6                                                                                                                                                                                                                                                                                                              |
| Shock resistance                                                 | 15 gn for 11 ms conforming to IEC 60068-2-27                                                                                                                                                                                                                                                                                                                                                                                     |
| Environmental characteristic                                     | Chemical pollution resistance class 3C3 conforming to IEC 60721-3-3<br>Dust pollution resistance class 3S3 conforming to IEC 60721-3-3                                                                                                                                                                                                                                                                                           |
| Relative humidity                                                | 5...95 % without condensation conforming to IEC 60068-2-3                                                                                                                                                                                                                                                                                                                                                                        |
| Ambient air temperature for operation                            | -15...50 °C (without derating)<br>50...60 °C (with derating factor)                                                                                                                                                                                                                                                                                                                                                              |
| Noise level                                                      | 68.3 dB                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Pollution degree                                                 | 2                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Ambient air transport temperature                                | -40...70 °C                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Ambient air temperature for storage                              | -40...70 °C                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Offer Sustainability

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| Sustainable offer status   | Green Premium product                                                                                                             |
| REACH Regulation           |  <a href="#">REACH Declaration</a>             |
| EU RoHS Directive          | Pro-active compliance (Product out of EU RoHS legal scope)                                                                        |
| Mercury free               | Yes                                                                                                                               |
| RoHS exemption information |  <a href="#">Yes</a>                           |
| China RoHS Regulation      |  <a href="#">China RoHS Declaration</a>        |
| Environmental Disclosure   |  <a href="#">Product Environmental Profile</a> |
| Circularity Profile        |  <a href="#">End Of Life Information</a>       |
| WEEE                       | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins       |