





## Main

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|------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Range of product                   | Altivar Process ATV900                                                                                            |
| Product or component type          | Variable speed drive                                                                                              |
| Device application                 | Industrial application                                                                                            |
| Device short name                  | ATV950                                                                                                            |
| Variant                            | With braking chopper<br>With load break switch                                                                    |
| Product destination                | Synchronous motors<br>Asynchronous motors                                                                         |
| EMC filter                         | Integrated 164.04 ft (50 m) EN/IEC 61800-3 category C2<br>Integrated 492.13 ft (150 m) EN/IEC 61800-3 category C3 |
| IP degree of protection            | IP55 IEC 61800-5-1<br>IP55 IEC 60529                                                                              |
| Degree of protection               | UL type 12 UL 508C                                                                                                |
| Type of cooling                    | Forced convection                                                                                                 |
| Supply frequency                   | 50...60 Hz +/- 5 %                                                                                                |
| Phase                              | 3 phase                                                                                                           |
| [Us] rated supply voltage          | 380...480 V - 15...10 %                                                                                           |
| Motor power kW                     | 15 kW normal duty)<br>11 kW heavy duty)                                                                           |
| Maximum Horse Power Rating         | 20 Hp normal duty<br>15 hp heavy duty                                                                             |
| Line current                       | 27 A 380 V normal duty)<br>23.3 A 480 V normal duty)<br>20.6 A 380 V heavy duty)<br>18.1 A 480 V heavy duty)      |
| Prospective line Isc               | 50 kA                                                                                                             |
| Apparent power                     | 19.4 KVA 480 V normal duty)<br>15 kVA 480 V heavy duty)                                                           |
| Continuous output current          | 31.7 A 4 kHz normal duty<br>23.5 A 4 kHz heavy duty                                                               |
| Maximum transient current          | 38 A 60 s normal duty)<br>35.3 A 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<br>Synchronous reluctance motor                                                            |
| Speed drive output frequency       | 0.1...599 Hz                                                                                                      |
| Nominal switching frequency        | 4 kHz                                                                                                             |
| Switching frequency                | 2...16 kHz adjustable<br>4...16 kHz with derating factor                                                          |
| Safety function                    | STO (safe torque off) SIL 3                                                                                       |
| Number of preset speeds            | 16 preset speeds                                                                                                  |

| Communication port protocol | Modbus TCP<br>Modbus serial<br>Ethernet/IP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| Option module               | Slot A communication module Profibus DP V1<br>Slot A communication module Profinet<br>Slot A communication module DeviceNet<br>Slot A communication module EtherCAT<br>Slot A communication module CANopen daisy chain RJ45<br>Slot A communication module CANopen SUB-D 9<br>Slot A communication module 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 Ethernet Powerlink |

## Complementary

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| Output voltage                      | <= power supply voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Motor slip compensation             | Can be suppressed<br>Automatic whatever the load<br>Adjustable<br>Not available in permanent magnet motor law                                                                                                                                                                                                                                                                                                                                                                                                |
| Acceleration and deceleration ramps | Linear adjustable separately from 0.01...9999 s                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Braking to standstill               | By DC injection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Protection type                     | 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 |
| Frequency resolution                | Display unit 0.1 Hz<br>Analog input 0.012/50 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Electrical connection               | Control screw terminal 0.5...1.5 mm <sup>2</sup><br>Line side screw terminal 10...16 mm <sup>2</sup><br>Motor screw terminal 10...16 mm <sup>2</sup><br>DC bus screw terminal 10...16 mm <sup>2</sup>                                                                                                                                                                                                                                                                                                        |
| Connector type                      | 2 RJ45 Ethernet IP/Modbus TCP on the control block<br>1 RJ45 Modbus serial on the control block                                                                                                                                                                                                                                                                                                                                                                                                              |
| Physical interface                  | 2-wire RS 485 Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Transmission frame                  | RTU Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Transmission rate                   | 10/100 Mbit/s Ethernet IP/Modbus TCP<br>4.8, 9.6, 19.2, 38.4 kbit/s Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Exchange mode                       | Half duplex, full duplex, autonegotiation Ethernet IP/Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Data format                         | 8 bits, configurable odd, even or no parity Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type of polarization                | No impedance Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Number of addresses                 | 1...247 Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Method of access                    | Slave Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Supply                              | External supply for digital inputs 24 V DC 19...30 V), <1.25 mA overload and short-circuit protection<br>Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 %, <10 mA overload and short-circuit protection<br>Internal supply for digital inputs and STO 24 V DC 21...27 V), <200 mA overload and short-circuit protection                                                                                                                                                          |
| Local signalling                    | 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)                                                                                                                                                                                                                                                                                                                             |

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| Maximum Width             | 10.39 in (264 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum Height            | 26.69 in (678 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum Depth             | 12.99 in (330 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Net Weight                | 43.21 lb(US) (19.6 kg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Analogue input number     | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Analogue input type       | AI1, AI2, AI3 software-configurable voltage 0...10 V DC 30 kOhm 12 bits<br>AI1, AI2, AI3 software-configurable current 0...20 mA/4...20 mA 250 Ohm 12 bits                                                                                                                                                                                                                                                                                                                                   |
| Discrete input number     | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Discrete input type       | DI1...DI8 programmable, 24 V DC ≤ 30 V)3.5 kOhm<br>DI7, DI8 programmable as pulse input 0...30 kHz, 24 V DC ≤ 30 V)<br>STOA, STOB safe torque off, 24 V DC ≤ 30 V)> 2.2 kOhm                                                                                                                                                                                                                                                                                                                 |
| Input compatibility       | DI1...DI8 discrete input level 1 PLC EN/IEC 61131-2<br>DI7, DI8 pulse input level 1 PLC IEC 65A-68<br>STOA, STOB discrete input level 1 PLC EN/IEC 61131-2                                                                                                                                                                                                                                                                                                                                   |
| Discrete input logic      | Positive logic (source) DI1...DI8), < 5 V, > 11 V<br>Negative logic (sink) DI1...DI8), > 16 V, < 10 V<br>Positive logic (source) DI7, DI8), < 0.6 V, > 2.5 V<br>Positive logic (source) STOA, STOB), < 5 V, > 11 V                                                                                                                                                                                                                                                                           |
| Analogue output number    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Analogue output type      | Software-configurable voltage AQ1, AQ2 0...10 V DC 470 Ohm 10 bits<br>Software-configurable current AQ1, AQ2 0...20 mA 500 Ohm 10 bits                                                                                                                                                                                                                                                                                                                                                       |
| Discrete output number    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Discrete output type      | Logic output DQ+ 0...1 kHz ≤ 30 V DC 100 mA<br>Programmable as pulse output DQ+ 0...30 kHz ≤ 30 V DC 20 mA<br>Logic output DQ- 0...1 kHz ≤ 30 V DC 100 mA                                                                                                                                                                                                                                                                                                                                    |
| 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 analog input<br>AQ1, AQ2 +/- 0.2 % analog output                                                                                                                                                                                                                                                                                                                                                                                                   |
| Maximum switching current | Relay output R1 resistive, cos phi = 1 3 A 250 V AC<br>Relay output R1 resistive, cos phi = 1 3 A 30 V DC<br>Relay output R1 inductive, cos phi = 0.4 7 ms 2 A 250 V AC<br>Relay output R1 inductive, cos phi = 0.4 7 ms 2 A 30 V DC<br>Relay output R2, R3 resistive, cos phi = 1 5 A 250 V AC<br>Relay output R2, R3 resistive, cos phi = 1 5 A 30 V DC<br>Relay output R2, R3 inductive, cos phi = 0.4 7 ms 2 A 250 V AC<br>Relay output R2, R3 inductive, cos phi = 0.4 7 ms 2 A 30 V DC |
| Relay output number       | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Relay output type         | Configurable relay logic R1 fault relay NO/NC 100000 cycles<br>Configurable relay logic R2 sequence relay NO 1000000 cycles<br>Configurable relay logic R3 sequence relay NO 1000000 cycles                                                                                                                                                                                                                                                                                                  |
| Refresh time              | Relay output R1, R2, R3)5 ms +/- 0.5 ms)                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Minimum switching current | Relay output R1, R2, R3 5 mA 24 V DC                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Isolation                 | Between power and control terminals                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Mounting mode             | Wall mount                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Environment

|                               |                                                                                                                                                                                                                                                                                                                                                            |
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| Insulation resistance         | > 1 MOhm 500 V DC for 1 minute to earth                                                                                                                                                                                                                                                                                                                    |
| Noise level                   | 53.7 dB 86/188/EEC                                                                                                                                                                                                                                                                                                                                         |
| Vibration resistance          | 1.5 mm peak to peak 2...13 Hz)IEC 60068-2-6<br>1 gn 13...200 Hz)IEC 60068-2-6                                                                                                                                                                                                                                                                              |
| Shock resistance              | 15 gn 11 ms IEC 60068-2-27                                                                                                                                                                                                                                                                                                                                 |
| Operating position            | Vertical +/- 10 degree                                                                                                                                                                                                                                                                                                                                     |
| Maximum THDI                  | <48 % from 80...100 % of load IEC 61000-3-12                                                                                                                                                                                                                                                                                                               |
| Electromagnetic compatibility | Electrostatic discharge immunity test level 3 IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3<br>Electrical fast transient/burst immunity test level 4 IEC 61000-4-4<br>1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5<br>Conducted radio-frequency immunity test level 3 IEC 61000-4-6 |

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| Environmental characteristic          | Chemical pollution resistance class 3C3 EN/IEC 60721-3-3<br>Dust pollution resistance class 3S3 EN/IEC 60721-3-3                                                                        |
| Pollution degree                      | 2 EN/IEC 61800-5-1                                                                                                                                                                      |
| Relative humidity                     | 5...95 % without condensation IEC 60068-2-3                                                                                                                                             |
| Ambient air temperature for operation | 5...104 °F (-15...40 °C) without<br>104...122 °F (40...50 °C) with derating factor)                                                                                                     |
| Ambient air temperature for storage   | -40...158 °F (-40...70 °C)                                                                                                                                                              |
| Operating altitude                    | <= 3280.84 ft (1000 m) without<br>1000...4800 m with current derating 1 % per 100 m                                                                                                     |
| Standards                             | EN/IEC 61800-3<br>Environment 1 category C2 EN/IEC 61800-3<br>Environment 2 category C3 EN/IEC 61800-3<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>TÜV<br>UL<br>Bureau Veritas<br>CSA<br>DNV-GL<br>ABS<br>REACH                                                                                                             |
| Marking                               | CE                                                                                                                                                                                      |

### Ordering and shipping details

|                     |                             |
|---------------------|-----------------------------|
| Category            | 22277 - ATV930 FRAMES 3 & 4 |
| Discount Schedule   | CP4E                        |
| GTIN                | 00785901066545              |
| Package weight(Lbs) | 55 lb(US) (24.95 kg)        |
| Returnability       | No                          |

### Offer Sustainability

|                            |                                                                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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)  <a href="#">EU RoHS Declaration</a> |
| 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.                                                         |