

# Product data sheet

Specifications



## Variable speed drive, Altivar Process ATV600, ATV630, 90kW/125 hp, 500V/690 V, IP00

ATV630D90Y6

### Main

<b>Range of product</b>	Altivar Process ATV600
<b>Product or component type</b>	Variable speed drive
<b>Product specific application</b>	Process and utilities
<b>Device short name</b>	ATV630
<b>Variant</b>	Standard version
<b>Product destination</b>	Asynchronous motors Synchronous motors
<b>EMC filter</b>	Integrated with 25 m conforming to EN/IEC 61800-3 category C3
<b>IP degree of protection</b>	IP00 conforming to IEC 61800-5-1 IP00 conforming to IEC 60529 IP20 (with kit VW3A9706) conforming to IEC 61800-5-1 IP20 (with kit VW3A9706) conforming to IEC 60529
<b>[Us] rated supply voltage</b>	500...690 V
<b>Type of cooling</b>	Forced convection
<b>Supply frequency</b>	50...60 Hz - 5...5 %
<b>[Us] rated supply voltage</b>	500...690 V - 15...10 %
<b>Motor power kW</b>	75 kW at 500 V (normal duty) 55 kW at 500 V (heavy duty) 90 kW at 690 V (normal duty) 75 kW at 690 V (heavy duty)
<b>Motor power hp</b>	100 hp at 500 V normal duty 75 hp at 500 V heavy duty 125 hp at 690 V normal duty 100 hp at 690 V heavy duty
<b>Line current</b>	108.3 A at 500 V (normal duty) 99.4 A at 690 V (normal duty) 82.7 A at 500 V (heavy duty) 87.7 A at 690 V (heavy duty)
<b>Prospective line I<sub>sc</sub></b>	70 kA
<b>Apparent power</b>	118.8 kVA at 690 V (normal duty) 104.8 kVA at 690 V (heavy duty)
<b>Continuous output current</b>	83 A at 2.5 kHz for heavy duty 108 A at 2.5 kHz for normal duty
<b>Maximum transient current</b>	124.5 A during 60 s (heavy duty) 118.8 A during 60 s (normal duty)
<b>Asynchronous motor control profile</b>	Variable torque standard Optimized torque mode Constant torque standard

<b>Synchronous motor control profile</b>	Permanent magnet motor Synchronous reluctance motor
<b>Speed drive output frequency</b>	0.1...500 Hz
<b>Nominal switching frequency</b>	2.5 kHz
<b>Switching frequency</b>	1...4.9 kHz adjustable 2.5...4.9 kHz with derating factor
<b>Safety function</b>	STO (safe torque off) SIL 3
<b>Discrete input logic</b>	16 preset speeds
<b>Communication port protocol</b>	Modbus TCP Modbus serial Ethernet
<b>Option card</b>	Slot A: communication module, Profibus DP V1 Slot A: communication module, Profinet Slot A: communication module, DeviceNet Slot A: communication module, Modbus TCP/EtherNet/IP Slot A: communication module, CANopen daisy chain RJ45 Slot A: communication module, CANopen SUB-D 9 Slot A: communication module, CANopen screw terminals Slot A/slot B: digital and analog I/O extension module Slot A/slot B: output relay extension module Slot A: communication module, Ethernet IP/Modbus TCP/MD-Link Communication module, BACnet MS/TP Communication module, Ethernet Powerlink

## Complementary

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

<b>Transmission frame</b>	RTU
<b>Electrical connection</b>	Control: removable screw terminals 0.5...1.5 mm <sup>2</sup> /AWG 20...AWG 16 Motor: screw terminal 50 mm <sup>2</sup> /AWG 1 Line side: screw terminal 50 mm <sup>2</sup> /AWG 1
<b>Connector type</b>	RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP RJ45 (on the remote graphic terminal) for Modbus serial
<b>Data format</b>	8 bits, configurable odd, even or no parity
<b>Type of polarization</b>	No impedance
<b>Exchange mode</b>	Half duplex, full duplex, autonegotiation Ethernet/Modbus TCP
<b>Number of addresses</b>	1...247 for Modbus serial
<b>Method of access</b>	Slave Modbus TCP
<b>Supply</b>	External supply for digital inputs: 24 V DC (19...30 V), <1.25 mA, protection type: overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection Internal supply for digital inputs and STO: 24 V DC (21...27 V), <200 mA, protection type: overload and short-circuit protection
<b>Local signalling</b>	3 LEDs for local diagnostic 3 LEDs (dual colour) for embedded communication status 4 LEDs (dual colour) for communication module status 1 LED (red) for presence of voltage
<b>Width</b>	331 mm
<b>Height</b>	630 mm
<b>Depth</b>	297 mm
<b>Net weight</b>	53 kg
<b>Analogue input number</b>	3
<b>Analogue input type</b>	AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 31.5 kOhm, resolution 12 bits AI1, AI2, AI3 software-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 12 bits AI2 voltage analog input: - 10...10 V DC, impedance: 31.5 kOhm, resolution 12 bits
<b>Discrete input number</b>	8
<b>Discrete input type</b>	DI7, DI8 programmable as pulse input: 0...30 kHz, 24 V DC (<= 30 V)
<b>Input compatibility</b>	DI1...DI6: discrete input level 1 PLC conforming to EN/IEC 61131-2 DI5, DI6: discrete input level 1 PLC conforming to IEC 65A-68 STOA, STOB: discrete input level 1 PLC conforming to EN/IEC 61131-2
<b>Discrete input logic</b>	Positive logic (source) (DI1...DI8), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (DI1...DI8), > 16 V (state 0), < 10 V (state 1)
<b>Analogue output number</b>	2
<b>Analogue output type</b>	Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AQ1, AQ2: 0...20 mA, resolution 10 bits Software-configurable current DQ-, DQ+: 30 V DC Software-configurable current DQ-, DQ+: 100 mA
<b>Sampling duration</b>	2 ms +/- 0.5 ms (DI1...DI4) - discrete input 5 ms +/- 1 ms (DI5, DI6) - discrete input 5 ms +/- 0.1 ms (AI1, AI2, AI3) - analog input 10 ms +/- 1 ms (AO1) - analog output
<b>Accuracy</b>	+/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input +/- 1 % AO1, AO2 for a temperature variation 60 °C analog output
<b>Linearity error</b>	AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input AO1, AO2: +/- 0.2 % for analog output
<b>Relay output number</b>	3
<b>Relay output type</b>	Configurable relay logic R1: fault relay NO/NC electrical durability 100000 cycles Configurable relay logic R2: sequence relay NO electrical durability 100000 cycles Configurable relay logic R3: sequence relay NO electrical durability 100000 cycles
<b>Refresh time</b>	Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)
<b>Minimum switching current</b>	Relay output R1, R2, R3: 5 mA at 24 V DC
<b>Maximum switching current</b>	Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 250 V AC Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 30 V DC Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC

<b>Isolation</b>	Between power and control terminals
<b>Maximum output frequency</b>	500 kHz
<b>Maximum input current</b>	108.3 A
<b>Quantity per set</b>	1
<b>Enclosure mounting</b>	Wall mounted

## Environment

<b>Insulation resistance</b>	> 1 MOhm 500 V DC for 1 minute to earth
<b>Noise level</b>	52 dB conforming to 86/188/EEC
<b>Power dissipation in W</b>	Natural convection: 320 W at 500 V, switching frequency 2.5 kHz Forced convection: 1433 W at 500 V, switching frequency 2.5 kHz
<b>Volume of cooling air</b>	406 m <sup>3</sup> /h
<b>Operating position</b>	Vertical +/- 10 degree
<b>Maximum THDI</b>	<48 % with external line choke conforming to IEC 61000-3-12
<b>Electromagnetic compatibility</b>	Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6
<b>Pollution degree</b>	2 conforming to EN/IEC 61800-5-1
<b>Vibration resistance</b>	1.5 mm peak to peak (f= 2...13 Hz) conforming to IEC 60068-2-6 1 gn (f= 13...200 Hz) conforming to IEC 60068-2-6
<b>Shock resistance</b>	15 gn for 11 ms conforming to IEC 60068-2-27
<b>Relative humidity</b>	5...95 % without condensation conforming to IEC 60068-2-3
<b>Ambient air temperature for operation</b>	-15...50 °C (without derating) 50...60 °C (with derating factor)
<b>Ambient air temperature for storage</b>	-40...70 °C
<b>Operating altitude</b>	<= 1000 m without derating 1000...4800 m with current derating 1 % per 100 m
<b>Standards</b>	UL 508C EN/IEC 61800-3 Environment 2 category C3 EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1
<b>Product certifications</b>	CSA TÜV UL
<b>Marking</b>	CE
<b>Standards</b>	UL 508C EN/IEC 61800-3 EN/IEC 61800-3 environment 2 category C3 EN/IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1
<b>Overvoltage category</b>	III
<b>Regulation loop</b>	Adjustable PID regulator
<b>Noise level</b>	56 dB
<b>Pollution degree</b>	2

## Packing Units

<b>Unit Type of Package 1</b>	PCE
-------------------------------	-----

<b>Number of Units in Package 1</b>	1
<b>Package 1 Weight</b>	68 kg
<b>Package 1 Height</b>	58 cm
<b>Package 1 width</b>	43.5 cm
<b>Package 1 Length</b>	110 cm
<b>Unit Type of Package 2</b>	PAL
<b>Number of Units in Package 2</b>	1
<b>Package 2 Weight</b>	52 kg
<b>Package 2 Height</b>	29.7 cm
<b>Package 2 width</b>	33.1 cm
<b>Package 2 Length</b>	63 cm

## Offer Sustainability

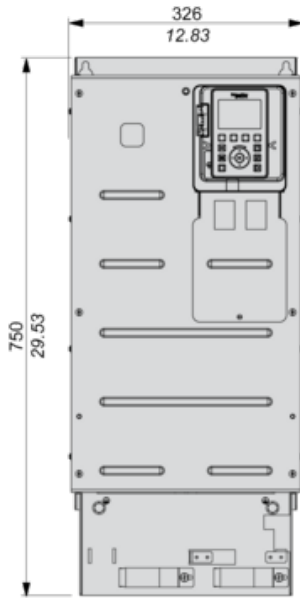
<b>Sustainable offer status</b>	Green Premium product
<b>REACH Regulation</b>	<a href="#">REACH Declaration</a>
<b>EU RoHS Directive</b>	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
<b>Mercury free</b>	Yes
<b>RoHS exemption information</b>	<a href="#">Yes</a>
<b>China RoHS Regulation</b>	<a href="#">China RoHS declaration</a>
<b>Environmental Disclosure</b>	<a href="#">Product Environmental Profile</a>
<b>Circularity Profile</b>	<a href="#">End of Life Information</a>
<b>WEEE</b>	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
<b>California proposition 65</b>	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>
<b>Upgradeability</b>	<a href="#">Upgraded components available</a> 

## Dimensions

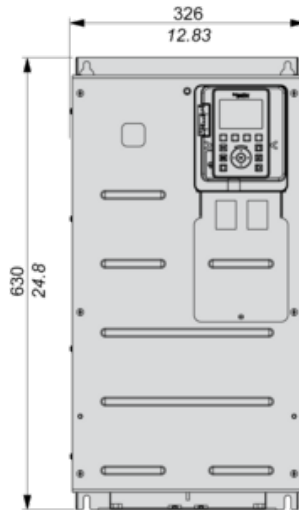
### Drives without Top Cover

Front View with EMC Plate, Front, Left and Rear Views without EMC Plate

mm  
in.



mm  
in.



mm  
in.



**Clearances**



X1	X2	X3
≥ 100 mm (3.94 in.)	≥ 100 mm (3.94 in.)	≥ 10 mm (0.39 in.)

**Mounting Types**

---

**Mounting Type A: Individual IP21**



$a \geq 0$

**Mounting Type B: Side by Side IP20**



**Mounting Type C: Individual IP20**

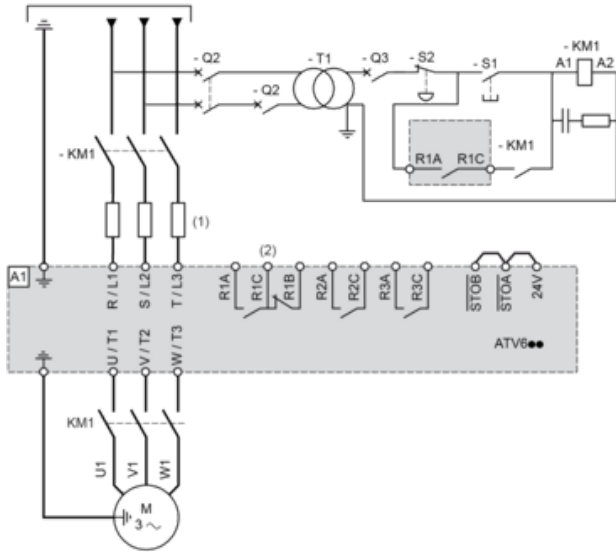


$a \geq 0$



**Three-Phase Power Supply with Upstream Breaking via Line Contactor**

Connection diagrams conforming to standards EN 954-1 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1



(1) Line choke if used

(2) Use relay R1 set to operating state Fault to switch Off the product once an error is detected.

A1 : Drive

KM1 : Line Contactor

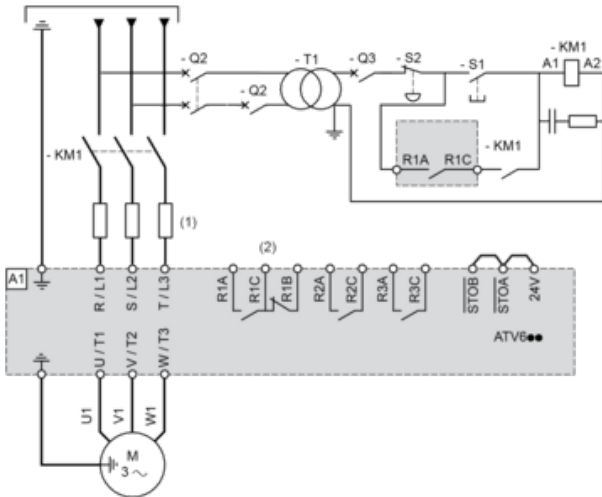
Q2, Q3 : Circuit breakers

S1, S2 : Pushbuttons

T1 : Transformer for control part

**Three-Phase Power Supply with Downstream Breaking via Contactor**

Connection diagrams conforming to standards EN 954-1 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1



(1) Line choke if used

(2) Use relay R1 set to operating state Fault to switch Off the product once an error is detected.

**A1** : Drive

**KM1** : Contactor

**Control Block Wiring Diagram**



- (1) Safe Torque Off
- (2) Analog Output
- (3) Digital Input
- (4) Reference potentiometer
- (5) Analog Input
- R1A, R1B, R1C** : Fault relay
- R2A, R2C** : Sequence relay
- R3A, R3C** : Sequence relay

**Sensor Connection**

It is possible to connect either 1 or 3 sensors on terminals AI2 or AI3.



## Sink / Source Switch Configuration

The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

- Set the switch to Source (factory setting) if using PLC outputs with PNP transistors.
- Set the switch to Ext if using PLC outputs with NPN transistors.

### Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



### Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



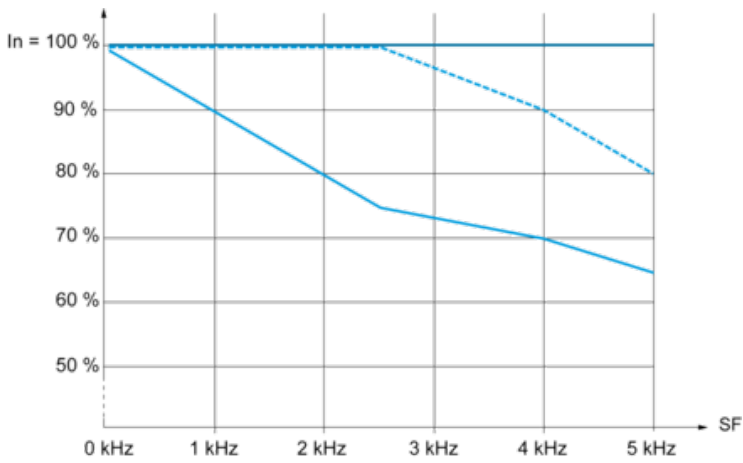
### Switch Set to SK (Sink) Position Using the Output Power Supply for the Digital Inputs



### Switch Set to EXT Position Using an External Power Supply for the DIs



Derating Curves



- 40 °C (104 °F) - Mounting type A, B and C
- - - 50 °C (122 °F) - Mounting type A, B and C
- 60 °C (140 °F) - Mounting type B and C

In : Nominal Drive Current

SF : Switching Frequency