Product datasheet

Specification





variable speed drive ATV630 - 30kW/40HP - 380...480V - IP21/ UL type 1

ATV630D30N4

Main

mann		
Range Of Product	Altivar Process ATV600	
Product Or Component Type	Variable speed drive	
Product Specific Application	Process and utilities	
Device Short Name	ATV630	
Variant	Standard version	
Product Destination	Asynchronous motors Synchronous motors	
Emc Filter	Integrated with 50 m conforming to EN/IEC 61800-3 category C2 Integrated with 150 m conforming to EN/IEC 61800-3 category C3	
Ip Degree Of Protection	IP21 conforming to IEC 61800-5-1 IP21 conforming to IEC 60529	
[Us] Rated Supply Voltage	380480 V	
Degree Of Protection	UL type 1 conforming to UL 508C	
Type Of Cooling	Forced convection	
Supply Frequency	5060 Hz - 55 %	
[Us] Rated Supply Voltage	380480 V - 1510 %	
Motor Power Kw	30 kW (normal duty) 22 kW (heavy duty)	
Motor Power Hp	40 hp normal duty 30 hp heavy duty	
Line Current	53.3 A at 380 V (normal duty) 45.9 A at 480 V (normal duty) 40.5 A at 380 V (heavy duty) 35.8 A at 480 V (heavy duty)	
Prospective Line Isc	50 kA	
Apparent Power	38.2 kVA at 480 V (normal duty) 29.8 kVA at 480 V (heavy duty)	
Continuous Output Current	61.5 A at 4 kHz for normal duty 46.3 A at 4 kHz for heavy duty	
Asynchronous Motor Control Profile	Variable torque standard Optimized torque mode Constant torque standard	
Synchronous Motor Control Profile	Permanent magnet motor Synchronous reluctance motor	
Speed Drive Output Frequency	0.1500 Hz	
Nominal Switching Frequency	4 kHz	
Switching Frequency	212 kHz adjustable 412 kHz with derating factor	

Safety Function	STO (safe torque off) SIL 3
Discrete Input Logic	16 preset speeds
Communication Port Protocol	Ethernet Modbus TCP Modbus serial
Option Card	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

Complementary	
Mounting Mode	Wall mount
Maximum Transient Current	67.7 A during 60 s (normal duty)
	69.5 A during 60 s (heavy duty)
Network Number Of Phases	3 phases
Discrete Output Number	0
Discrete Output Type	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
Output Voltage	<= power supply voltage
Permissible Temporary Current	1.1 x In during 60 s (normal duty)
Boost	1.5 x In during 60 s (heavy duty)
Motor Slip Compensation	Adjustable
	Automatic whatever the load
	Can be suppressed
	Not available in permanent magnet motor law
Acceleration And Deceleration Ramps	Linear adjustable separately from 0.019999 s
Physical Interface	Ethernet
	2-wire RS 485
Braking To Standstill	By DC injection
Protection Type	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
	Overspeed: drive Break on the control circuit: drive
Transmission Rate	10, 100 Mbits
	4800 bps, 9600 bps, 19200 bps, 38.4 Kbps
Frequency Resolution	Display unit: 0.1 Hz
· •	Analog input: 0.012/50 Hz
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Transmission Frame	RTU	
Electrical Connection	Control: removable screw terminals 0.51.5 mm²/AWG 20AWG 16 Line side: screw terminal 2550 mm²/AWG 4AWG 1 Motor: screw terminal 2550 mm²/AWG 4AWG 1	
Connector Type	RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP RJ45 (on the remote graphic terminal) for Modbus serial	
Data Format	8 bits, configurable odd, even or no parity	
Type Of Polarization	No impedance	
Exchange Mode	Half duplex, full duplex, autonegotiation Ethernet/Modbus TCP	
Number Of Addresses	1247 for Modbus serial	
Method Of Access	Slave Modbus TCP	
Supply	External supply for digital inputs: 24 V DC (1930 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 (2127 V), <200 mA, protection type: overload and short-circuit protection	
Local Signalling	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	
Width	226 mm	
Height	673 mm	
Depth	271 mm	
Net Weight	28 kg	
Analogue Input Number	3	
Analogue Input Type	Al1, Al2, Al3 software-configurable voltage: 010 V DC, impedance: 31.5 kOhm, resolution 12 bits Al1, Al2, Al3 software-configurable current: 020 mA, impedance: 250 Ohm, resolution 12 bits Al2 voltage analog input: - 1010 V DC, impedance: 31.5 kOhm, resolution 12 bits	
Discrete Input Number	8	
Discrete Input Type	DI7, DI8 programmable as pulse input: 030 kHz, 24 V DC (<= 30 V)	
Input Compatibility	DI1DI6: 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	
Discrete Input Logic	Positive logic (source) (DI1DI8), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (DI1DI8), > 16 V (state 0), < 10 V (state 1)	
Analogue Output Number	2	
Analogue Output Type	Software-configurable voltage AQ1, AQ2: 010 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AQ1, AQ2: 020 mA, resolution 10 bits Software-configurable current DQ-, DQ+: 30 V DC Software-configurable current DQ-, DQ+: 100 mA	
Sampling Duration	2 ms +/- 0.5 ms (DI1DI4) - 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	
Accuracy	+/- 0.6 % Al1, Al2, Al3 for a temperature variation 60 °C analog input +/- 1 % AO1, AO2 for a temperature variation 60 °C analog output	
Linearity Error	AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input AO1, AO2: +/- 0.2 % for analog output	
Relay Output Number	3	

Relay Output Type	Configurable relay logic R1: fault relay NO/NC electrical durability 100000 cycles	
	Configurable relay logic R2: sequence relay NO electrical durability 100000 cyc Configurable relay logic R3: sequence relay NO electrical durability 100000 cyc	
Refresh Time	Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)	
Minimum Switching Current	Relay output R1, R2, R3: 5 mA at 24 V DC	
Maximum Switching Current	Relay output R1, R2, R3 on 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	
Isolation	Between power and control terminals	
Maximum Output Frequency	500 kHz	
Maximum Input Current	53.3 A	
Variable Speed Drive Application	Building - HVAC compressor centrifugal	
Selection	Food and beverage processing other application	
	Mining mineral and metal fan	
	Mining mineral and metal pump	
	Oil and gas fan	
	Water and waste water other application Building - HVAC screw compressor	
	Food and beverage processing pump	
	Food and beverage processing pump	
	Food and beverage processing atomization	
	Oil and gas electro submersible pump (ESP)	
	Oil and gas water injection pump	
	Oil and gas jet fuel pump	
	Oil and gas compressor for refinery	
	Water and waste water centrifuge pump	
	Water and waste water positive displacement pump	
	Water and waste water electro submersible pump (ESP)	
	Water and waste water screw pump	
	Water and waste water lobe compressor	
	Water and waste water screw compressor	
	Water and waste water compressor centrifugal	
	Water and waste water fan	
	Water and waste water conveyor	
	Water and waste water mixer	
Motor Power Range Ac-3	3050 kW at 380440 V 3 phases	
	3050 kW at 480500 V 3 phases	
Quantity Per Set	1	
Enclosure Mounting	Wall mounted	

Environment

Insulation Resistance	> 1 MOhm 500 V DC for 1 minute to earth	
Noise Level	63.5 dB conforming to 86/188/EEC	
Power Dissipation In W	Natural convection: 93 W at 380 V, switching frequency 4 kHz Forced convection: 640 W at 380 V, switching frequency 4 kHz	
Volume Of Cooling Air	240 m3/h	
Operating Position	Vertical +/- 10 degree	
Maximum Thdi	<48 % from 80100 % of load conforming to IEC 61000-3-12	
Electromagnetic Compatibility	Piectrostatic 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	
Pollution Degree	2 conforming to EN/IEC 61800-5-1	
Vibration Resistance	1.5 mm peak to peak (f= 213 Hz) conforming to IEC 60068-2-6 1 gn (f= 13200 Hz) conforming to IEC 60068-2-6	

Shock Resistance	15 gn for 11 ms conforming to IEC 60068-2-27	
Relative Humidity	595 % without condensation conforming to IEC 60068-2-3	
Ambient Air Temperature For Operation	-1550 °C (without derating) 5060 °C (with derating factor)	
Ambient Air Temperature For Storage	-4070 °C	
Operating Altitude	<= 1000 m without derating 10004800 m with current derating 1 % per 100 m	
Product Certifications	TÜV ATEX INERIS UL CSA ATEX zone 2/22 DNV-GL	
Marking	CE	
Standards	UL 508C EN/IEC 61800-3 EN/IEC 61800-3 environment 1 category C2 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	
Overvoltage Category	III	
Regulation Loop	Adjustable PID regulator	
Noise Level	63.5 dB	
Pollution Degree	2	

Packing Units

Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	55.0 cm
Package 1 Width	84.0 cm
Package 1 Length	33.0 cm
Package 1 Weight	38.0 kg

Sustainability Green Premium™

Green PremiumTM **label** is Schneider Electric's commitment to delivering products with best-inclass environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO₂ products.

Guide to assessing product sustainability is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

Learn more about Green Premium >

Guide to assess a product's sustainability >





Transparency RoHS/REACh

Resource performance



Upgraded Components Available

Well-being performance



Mercury Free



Rohs Exemption Information

Yes

Certifications & Standards

Reach Regulation	REACh Declaration		
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)		
China Rohs Regulation	China RoHS declaration		
Environmental Disclosure	Product Environmental Profile		
Weee	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins		
Circularity Profile	End of Life Information		

Dimensions Drawings

Dimensions

Drives with IP21 Top Cover

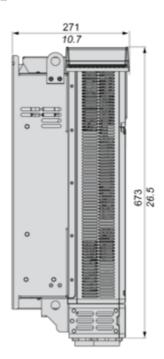
Front, Left and Rear Views

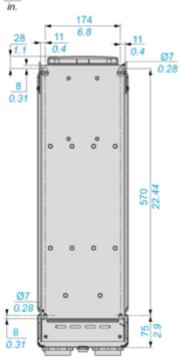


mm









Drives Without IP21 Top Cover Left and Rear Views

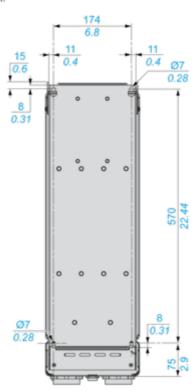
Product datasheet

ATV630D30N4

mm in.

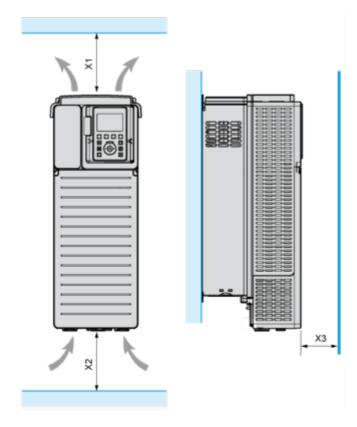






Mounting and Clearance

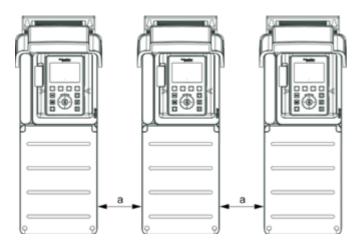
Clearances



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

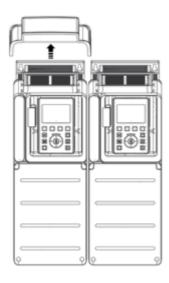
Mounting Types

Mounting Type A: Individual IP21

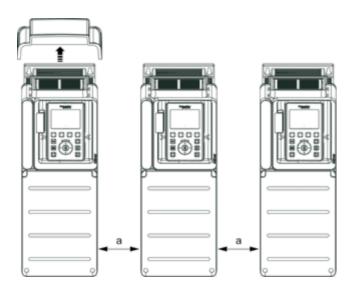


a ≥ = 110 mm (4.33 in.)

Mounting Type B: Side by Side IP20 (Possible, 2 Drives Only)



Mounting Type C: Individual IP20

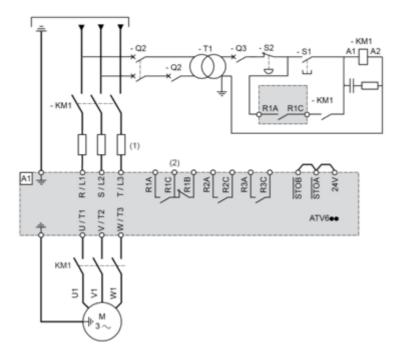


a ≥ = 110 mm (4.33 in.)

Connections and Schema

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.

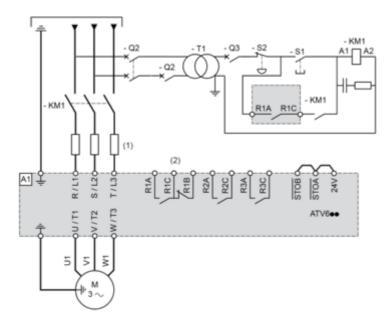
A1 : Drive

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

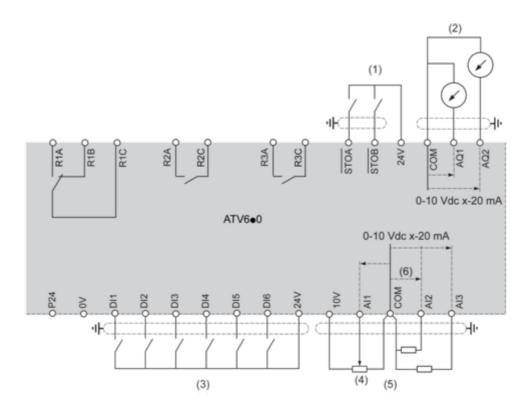


(1) Line choke if used

(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

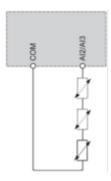


- (1) Safe Torque Off
- (2) Analog Output
- (3) Digital Input
- (4) Reference potentiometer
- (5) Analog Input

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 Al2 or Al3.

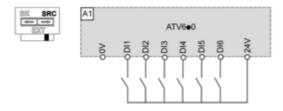


Sink / Source Switch Configuration

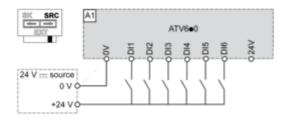
The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

- 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.

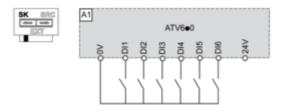
Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



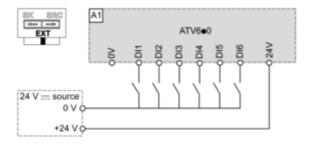
Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



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

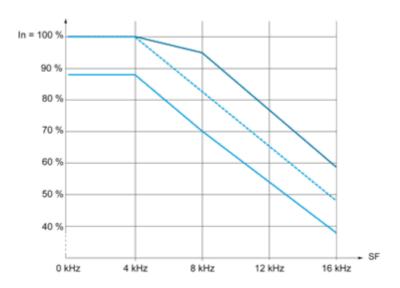


Switch Set to EXT Position Using an External Power Supply for the DIs



Performance Curves

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