# **Product datasheet**

Specification





variable speed drive, Altivar Process ATV600, ATV630, 15kW, 20hp, 380 to 480V, IP21, UL type 1

ATV630D15N4

# Main

mam		
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	15 kW (normal duty) 11 kW (heavy duty)	
Motor power hp	20 hp normal duty 15 hp heavy duty	
Line current	27 A at 380 V (normal duty) 23.3 A at 480 V (normal duty) 20.6 A at 380 V (heavy duty) 18.1 A at 480 V (heavy duty)	
Prospective line Isc	50 kA	
Apparent power	19.4 kVA at 480 V (normal duty) 15 kVA at 480 V (heavy duty)	
Continuous output current	31.7 A at 4 kHz for normal duty 23.5 A at 4 kHz for heavy duty	
Asynchronous motor control profile	Constant torque standard Variable torque standard Optimized torque mode	
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 serial Modbus TCP
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

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mounting mode	Wall mount
Maximum transient current	34.9 A during 60 s (normal duty) 35.3 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 boost	1.1 x In during 60 s (normal duty) 1.5 x In during 60 s (heavy duty)
Motor slip compensation	Can be suppressed Adjustable Automatic whatever the load 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 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

RTU	
Control: removable screw terminals 0.51.5 mm²/AWG 20AWG 16 Line side: screw terminal 1016 mm²/AWG 8AWG 6 Motor: screw terminal 1016 mm²/AWG 8AWG 6	
RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP RJ45 (on the remote graphic terminal) for Modbus serial	
8 bits, configurable odd, even or no parity	
No impedance	
Half duplex, full duplex, autonegotiation Ethernet/Modbus TCP	
1247 for Modbus serial	
Slave Modbus TCP	
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	
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	
211 mm	
546 mm	
232 mm	
13.6 kg	
3	
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	
8	
DI7, DI8 programmable as pulse input: 030 kHz, 24 V DC (<= 30 V)	
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	
Positive logic (source) (DI1DI8), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (DI1DI8), > 16 V (state 0), < 10 V (state 1)	
2	
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	
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	
+/- 0.6 % Al1, Al2, Al3 for a temperature variation 60 °C analog input +/- 1 % AO1, AO2 for a temperature variation 60 °C analog output	
Al1, Al2, Al3: +/- 0.15 % of maximum value for analog input AO1, AO2: +/- 0.2 % for analog output	
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 cycles Configurable relay logic R3: sequence relay NO electrical durability 100000 cycles	
Refresh time	Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)	
Minimum switching current	Relay output R1, R2, R3: 5 mA at 24 V DC	
Maximum switching current	Relay output R1, R2, R3 on 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	27.0 A	
Variable speed drive application selection	Building - HVAC compressor centrifugal 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 fan 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 jet fuel pump 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 screw pump Water and waste water screw compressor Water and waste water compressor centrifugal Water and waste water fan Water and waste water mixer	
Motor power range AC-3	1525 kW at 380440 V 3 phases 1525 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	59.5 dB conforming to 86/188/EEC	
Power dissipation in W	Natural convection: 59 W at 380 V, switching frequency 4 kHz Forced convection: 366 W at 380 V, switching frequency 4 kHz	
Volume of cooling air	215 m3/h	
Operating position	Vertical +/- 10 degree	
Maximum THDI	<48 % from 80100 % of load conforming to IEC 61000-3-12	
Electromagnetic compatibility	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	
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	ATEX zone 2/22 TÜV ATEX INERIS CSA UL 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	59.5 dB	
Pollution degree	2	

# **Packing Units**

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	25.500 cm
Package 1 Width	73.500 cm
Package 1 Length	34.000 cm
Package 1 Weight	16.710 kg
Unit Type of Package 2	P06
Number of Units in Package 2	4
Package 2 Height	90.000 cm
Package 2 Width	60.000 cm
Package 2 Length	80.000 cm
Package 2 Weight	78.472 kg

# Sustainability Green Premium

**Green Premium**<sup>TM</sup> **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-CO<sub>2</sub> 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**

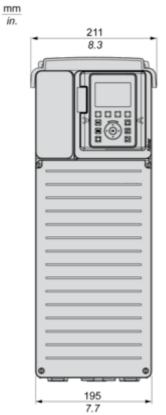
Reach Regulation	REACh Declaration	
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)	
China Rohs Regulation	China RoHS declaration	
Environmental Disclosure	Product Environmental Profile	
Weee	The product must be disposed on European Union markets following specific waste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

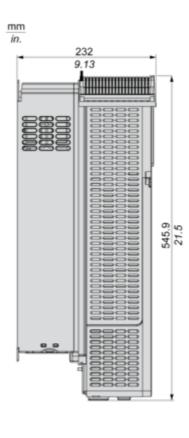
## **Dimensions Drawings**

## **Dimensions**

# **Drives with IP21 Top Cover**

Front and Left Views



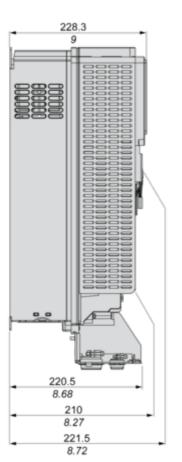


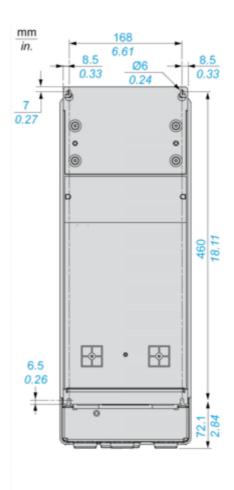
**Drives Without IP21 Top Cover** Left and Rear Views

# **Product datasheet**

# ATV630D15N4

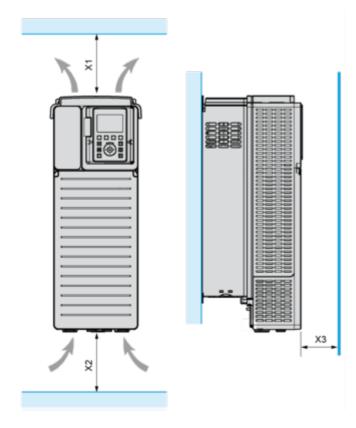
mm in.





# Mounting and Clearance

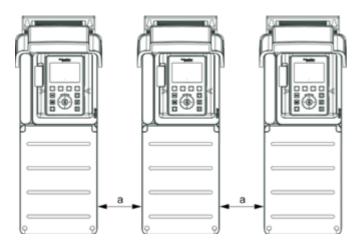
# Clearances



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

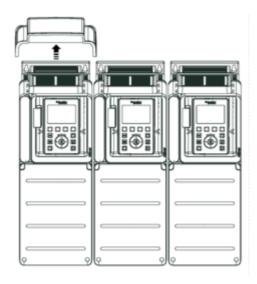
## **Mounting Types**

### Mounting Type A: Individual IP21

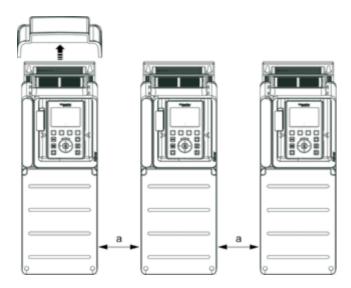


a ≥ 100 mm (3.94 in.)

## Mounting Type B: Side by Side IP20



Mounting Type C: Individual IP20

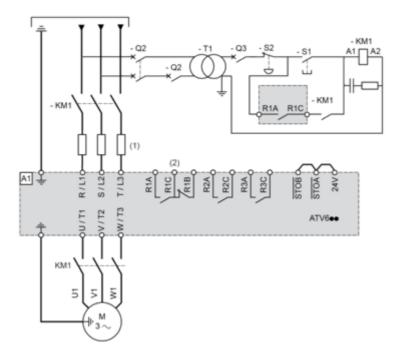


a ≥ 0

#### 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.

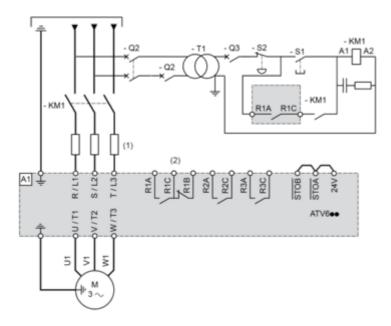
A1 : Drive

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



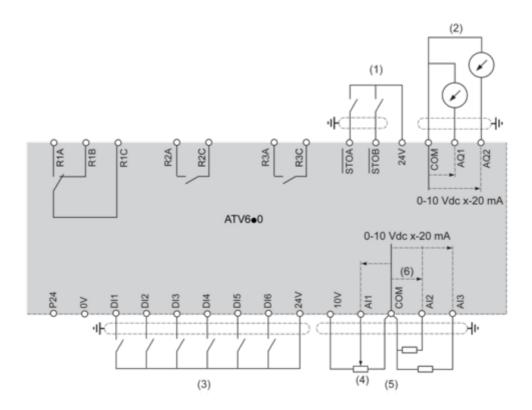
(1) Line choke if used

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

A1 : Drive KM1 : Contactor

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## **Control Block Wiring Diagram**

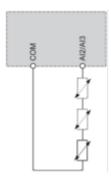


- (1) Safe Torque Off
- (2) Analog Output
- (3) Digital Input
- (4) Reference potentiometer
- (5) Analog Input

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.

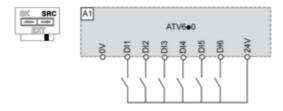


### Sink / Source Switch Configuration

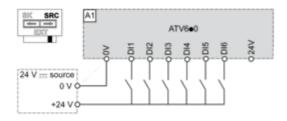
The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

- 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.

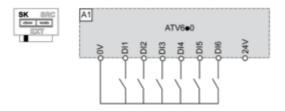
#### Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



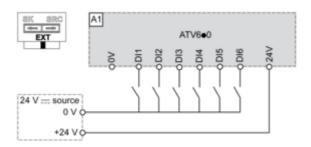
#### Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



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

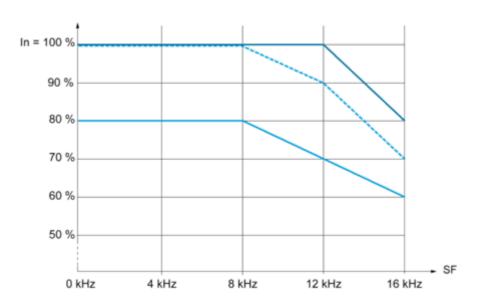


### Switch Set to EXT Position Using an External Power Supply for the DIs



### 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