

Product data sheet

Specifications



Refurbish variable speed drive,
Altivar Process ATV600, ATV650,
90kW, 400 to 480V, IP55,
disconnect switch

ATV650D90N4ER



This refurbished option saves 545.247 over
the standard condition

Main

Range of product	Altivar Process ATV600
Product or component type	Variable speed drive
Product specific application	Process and utilities
Device short name	ATV650
Variant	With disconnect switch
Product destination	Asynchronous motors Synchronous motors
EMC filter	Integrated with 150 m conforming to IEC 61800-3 category C3
IP degree of protection	IP55 conforming to IEC 60529 IP55 conforming to IEC 61800-5-1
[Us] rated supply voltage	380...480 V
Type of cooling	Forced convection
Supply frequency	50...60 Hz - 5...5 %
[Us] rated supply voltage	380...480 V - 15...10 %
Motor power kW	75 kW (heavy duty) 90 kW (normal duty)
Motor power hp	100 hp heavy duty 125 hp normal duty
Line current	135.8 A at 480 V (normal duty) 134.3 A at 380 V (heavy duty) 118.1 A at 480 V (heavy duty) 156.2 A at 380 V (normal duty)
Prospective line Isc	50 kA
Apparent power	98.2 kVA at 480 V (heavy duty) 112.9 kVA at 480 V (normal duty)
Continuous output current	145 A at 2.5 kHz for heavy duty 173 A at 2.5 kHz for normal duty
Asynchronous motor control profile	Constant torque standard Variable torque standard
Synchronous motor control profile	Synchronous reluctance motor Permanent magnet motor
Speed drive output frequency	0.1...500 Hz
Nominal switching frequency	2.5 kHz
Switching frequency	2...8 kHz adjustable 2.5...8 kHz with derating factor

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

Safety function	STO (safe torque off) SIL 3
Discrete input logic	16 preset speeds
Communication port protocol	Modbus TCP Modbus serial
Option card	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 Slot A: communication module, Profibus DP V1

Complementary

mounting mode	Wall mount
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	1.5 x I _n during 60 s (heavy duty) 1.1 x I _n during 60 s (normal duty)
Motor slip compensation	Not available in permanent magnet motor law Automatic whatever the load Can be suppressed
Acceleration and deceleration ramps	Linear adjustable separately from 0.01...9999 s
Physical interface	Ethernet 2-wire RS 485
Braking to standstill	By DC injection
Protection type	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 Thermal protection: motor
Transmission rate	10, 100 Mbits 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps
Frequency resolution	Analog input: 0.012/50 Hz Display unit: 0.1 Hz
Transmission frame	RTU

Electrical connection	Line side: screw terminal 95...120 mm²/AWG 3/0...250 kcmil Motor: screw terminal 120 mm²/AWG 4...250 kcmil Control: removable screw terminals 0.5...1.5 mm²
Connector type	RJ45 (on the remote graphic terminal) for Modbus serial RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP
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	1...247 for Modbus serial
Method of access	Slave Modbus TCP
Supply	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 External supply for digital inputs: 24 V DC (19...30 V), <1.25 mA, protection type: overload and short-circuit protection
Local signalling	3 LEDs (dual colour) for embedded communication status 4 LEDs (dual colour) for communication module status 1 LED (red) for presence of voltage 3 LEDs for local diagnostic
Width	345 mm
Height	1250 mm
Depth	436 mm
Product weight	50 kg
Analogue input number	3
Analogue input type	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
Discrete input number	8
Discrete input type	DI7, DI8 programmable as pulse input: 0...30 kHz, 24 V DC (<= 30 V)
Input compatibility	DI5, DI6: discrete input level 1 PLC conforming to IEC 65A-68 STOA, STOB: discrete input level 1 PLC conforming to IEC 61131-2 DI1...DI6: 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) Negative logic (sink) (DI1...DI8), > 16 V (state 0), < 10 V (state 1)
Analogue output number	2
Analogue output type	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
Sampling duration	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 2 ms +/- 0.5 ms (DI1...DI4) - discrete input
Accuracy	+/- 1 % AO1, AO2 for a temperature variation 60 °C analog output +/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input
Linearity error	AO1, AO2: +/- 0.2 % for analog output AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input
Relay output number	3
Relay output type	Configurable relay logic R2: sequence relay NO electrical durability 100000 cycles Configurable relay logic R3: sequence relay NO electrical durability 100000 cycles Configurable relay logic R1: fault relay NO/NC 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 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 Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 250 V AC
Isolation	Between power and control terminals
Maximum output frequency	500 kHz
Maximum input current	156.2 A
Variable speed drive application 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 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 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	55...100 kW at 480...500 V 3 phases
Quantity per set	1
Enclosure mounting	Wall mounted
Maximum transient current	217.5 A during 60 s (heavy duty) 190.3 A during 60 s (normal duty)

Environment

Insulation resistance	> 1 MOhm 500 V DC for 1 minute to earth
Noise level	69.9 dB conforming to 86/188/EEC
Operating position	Vertical +/- 10 degree
Maximum THDI	<48 % from 80...100 % of load conforming to IEC 61000-3-12
Electromagnetic compatibility	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 Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2
Pollution degree	2 conforming to IEC 61800-5-1
Vibration resistance	1 gn (f= 13...200 Hz) conforming to IEC 60068-2-6 1.5 mm peak to peak (f= 2...13 Hz) conforming to IEC 60068-2-6
Shock resistance	15 gn for 11 ms conforming to IEC 60068-2-27
Relative humidity	5...95 % without condensation conforming to IEC 60068-2-3
Ambient air temperature for operation	40...50 °C (with derating factor) -15...40 °C (without derating)

Ambient air temperature for storage	-40...70 °C
Operating altitude	1000...4800 m with current derating 1 % per 100 m <= 1000 m without derating
Product certifications	UL DNV-GL ATEX zone 2/22 TÜV CSA
Marking	CE
Standards	IEC 61800-3 IEC 61800-3 environment 1 category C2 EN/IEC 61800-3 environment 2 category C3 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	69.9 dB
Pollution degree	3

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	140.005 cm
Package 1 Width	43.002 cm
Package 1 Length	62.992 cm
Package 1 Weight	82.826 kg



Environmental Data

Schneider Electric aims to achieve Net Zero status by 2050 through supply chain partnerships, lower impact materials, and circularity via our ongoing “Use Better, Use Longer, Use Again” campaign to extend product lifetimes and recyclability.

[Environmental Data explained >](#)

[How we assess product sustainability >](#)



Environmental footprint

Lower carbon footprint

545 kg CO2 eq.

Use Better



Materials and Substances

SCIP Number

F47c1826-1975-4a28-8a90-82ca90eb3b60

California proposition 65

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 www.P65Warnings.ca.gov

Use Longer



Lifetime extension

Repair

No

Use Again



Repack and remanufacture

WEEE Label



The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins