Product data sheet

Specifications

Variable speed drive, Altivar Solar, 1.5kW, 380 to 500V, 3 phases, compact

ATV320U15N4C412

Product availability: Stock - Normally stocked in distribution facility

Main

Range of Product	Altivar Solar
Product or Component Type	Variable speed drive
Product Specific Application	Pumping applications
Variant	Standard version
Format of the drive	Compact
Mounting Mode	Wall mount
Communication Port Protocol	Modbus serial CANopen
Option card	communication module, Ethernet IP/Modbus TCP
[Us] rated supply voltage	380...500 V - 15...10 %
Nominal output current	4.1 A
Motor power kW	1.5 kW heavy duty
EMC filter	Class C2 EMC filter integrated
IP degree of protection	IP20

Complementary

Discrete input number	7
Discrete input type	STO safe torque off, 24 V DC1.5 kOhm DI1...DI6 logic inputs, 24 V DC 30 V) DI5 programmable as pulse input 0…30 kHz, 24 V DC 30 V)
Discrete input logic	Positive logic (source) Negative logic (sink)
Discrete output number	3
Discrete output type	Open collector DQ+ 0…1 kHz 30 V DC 100 mA Open collector DQ- 0…1 kHz 30 V DC 100 mA
Analogue input number	3
Analogue input type	AI1 voltage 0...10 V DC 30 kOhm 10 bits AI2 bipolar differential voltage +/- 10 V DC 30 kOhm 10 bits AI3 current 0...20 mA (or 4-20 mA, x-20 mA, 20-x mA or other patterns by configuration) 250 Ohm 10 bits
Analogue output number	1
Analogue output type	Software-configurable current AQ1 0...20 mA 800 Ohm 10 bits Software-configurable voltage AQ1 0...10 V DC 470 Ohm 10 bits
Relay output number	2

Price is “List Price” and may be subject to a trade discount – check with your local distributor or retailer for actual price.

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

Relay output type	Configurable relay logic R1A 1 NO 100000 cycles Configurable relay logic R1B 1 NC 100000 cycles Configurable relay logic R1C Configurable relay logic R2A 1 NO 100000 cycles Configurable relay logic R2C
Maximum switching current	Relay output R1A, R1B, R1C resistive, cos phi = 1 3 A 250 V AC Relay output R1A, R1B, R1C resistive, cos phi = 1 3 A 30 V DC Relay output R1A, R1B, R1C, R2A, R2C inductive, cos phi = 0.4 7 ms 2 A 250 V AC Relay output R1A, R1B, R1C, R2A, R2C inductive, cos phi = 0.4 7 ms 2 A 30 V DC Relay output R2A, R2C resistive, cos phi = 1 5 A 250 V AC Relay output R2A, R2C resistive, cos phi = 1 5 A 30 V DC
Minimum switching current	Relay output R1A, R1B, R1C, R2A, R2C 5 mA 24 V DC
Method of access	Slave CANopen
Number of addresses	1…247 1…127
Data format	8 bits, configurable odd, even or no parity
Type of polarization	No impedance
4 quadrant operation possible	True
Asynchronous motor control profile	Voltage/frequency ratio, 5 points Flux vector control without sensor, standard Voltage/frequency ratio - Energy Saving, quadratic U/f Flux vector control without sensor - Energy Saving Voltage/frequency ratio, 2 points
Synchronous motor control profile	Vector control without sensor
Maximum output frequency	0.599 kHz
Acceleration and deceleration ramps	Linear U S CUS Ramp switching Acceleration/deceleration ramp adaptation Acceleration/deceleration automatic stop with DC injection Automatic adaptation of ramp if braking capacity exceeded, by using resistor Linear adjustable separately from 0.01 to 6000 s
Motor slip compensation	Automatic whatever the load Adjustable 0...300 % Not available in voltage/frequency ratio (2 or 5 points)
Switching frequency	2...16 kHz adjustable 4...16 kHz with derating factor
Nominal switching frequency	4 kHz
Braking to standstill	By DC injection
Brake chopper integrated	True
Line current	6.4 A 380 V heavy duty) 4.9 A 500 V heavy duty)
Maximum Input Current per Phase	6.4 A
Maximum output voltage	500 V
Apparent power	4.2 kVA 500 V heavy duty)
Maximum transient current	6.2 A 60 s
Short-circuit protection	thermal protection
Network Frequency	50-60 Hz
Relative symmetric network frequency tolerance	5 %
Prospective line Isc	5 kA
Base load current at high overload	3.0 A

Power dissipation in W	Fan 56.0 W 380 V 4 kHz
Electrical connection	Screw terminal 0.5...1.5 mm² analog input Screw terminal analog output Screw terminal
With safety function Safely Limited Speed (SLS)	True
With safety function Safe brake management (SBC/SBT)	False
With safety function Safe Operating Stop (SOS)	False
With safety function Safe Position (SP)	False
With safety function Safe programmable logic	False
With safety function Safe Speed Monitor (SSM)	False
With safety function Safe Stop 1 (SS1)	True
With sft fct Safe Stop 2 (SS2)	False
With safety function Safe torque off (STO)	True
With safety function Safely Limited Position (SLP)	False
With safety function Safe Direction (SDI)	False
Protection type	Input phase breaks drive Overcurrent between output phases and earth drive Overheating protection drive Short-circuit between motor phases drive Thermal protection drive
Width	4.1 in (105.0 mm)
Height	5.6 in (142.0 mm)
Depth	6.2 in (158.0 mm)
Net Weight	2.9 lb(US) (1.3 kg)
Power factor	0.491 at 380 V
Braking torque	170 % with braking resistor
Local signalling	for drive fault 1 LED (red) for CANopen error 1 LED (red) for CANopen run 1 LED (green)
Transient overtorque	170…200 % of nominal motor torque

Environment

Operating position	Vertical +/- 10 degree
Product Certifications	CE UR UKCA RCM
Marking	CE UR UKCA RCM
Standards	IEC 61800-5-1
Assembly style	With heat sink

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 Voltage dips and interruptions immunity test conforming to IEC 61000-4-11
Environmental class (during operation)	Class 3C3 according to IEC 60721-3-3 Class 3S2 according to IEC 60721-3-3
Maximum acceleration under shock impact (during operation)	150 m/s² at 11 ms
Maximum acceleration under vibrational stress (during operation)	10 m/s² at 13...200 Hz
Maximum deflection under vibratory load (during operation)	1.5 mm at 2...13 Hz
Permitted relative humidity (during operation)	Class 3K5 according to EN 60721-3
Volume of cooling air	4755.2 Gal/hr(US) (18.0 m3/h)
Overvoltage category	II
Regulation loop	Adjustable PID regulator
Speed accuracy	+/- 10 % of nominal slip 0.2 Tn to Tn
Noise level	51 dB
pollution degree	2
Ambient air transport temperature	-13…158 °F (-25…70 °C)
Ambient air temperature for operation	14…122 °F (-10…50 °C) without derating 122…140 °F (50…60 °C) with derating factor
Ambient Air Temperature for Storage	-13…158 °F (-25…70 °C)
Operating altitude	3280.84...6561.68 ft (1000...2000 m) with current derating 1 % per 100 m <= 3280.84 ft (1000 m) without derating

Ordering and shipping details

Category	US1CP4B22152
Discount Schedule	CP4B
GTIN	3606486835890
Returnability	Yes
Country of origin	ID

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	7.09 in (18 cm)
Package 1 Width	7.28 in (18.5 cm)
Package 1 Length	7.28 in (18.5 cm)
Package 1 Weight	3.77 lb(US) (1.71 kg)
Unit Type of Package 2	S06
Number of Units in Package 2	30
Package 2 Height	29.53 in (75 cm)
Package 2 Width	23.62 in (60 cm)

Package 2 Length	31.50 in (80 cm)
Package 2 Weight	141.8 lb(US) (64.3 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

Carbon footprint (kg CO2 eq, Total Life cycle)	1368
Environmental Disclosure	Product Environmental Profile

Use Better

Materials and Substances

Packaging made with recycled cardboard	Yes
Packaging without single use plastic	Yes
SCIP Number	C0283eca-aee5-4ec9-9f8c-c7e056d0a8d7
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

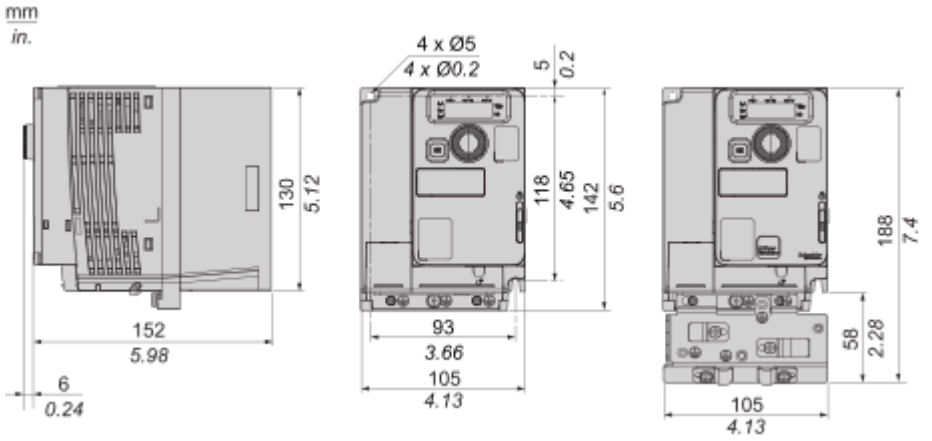
Use Again

Repack and remanufacture

Circularity Profile	End of Life Information
Take-back	No
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.

Dimensions Drawings

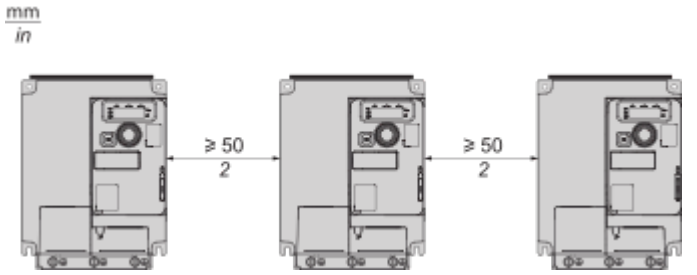
Dimensions



Mounting and Clearance

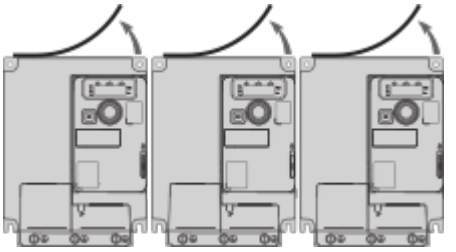
Mounting Types

Individual with Ventilation Cover



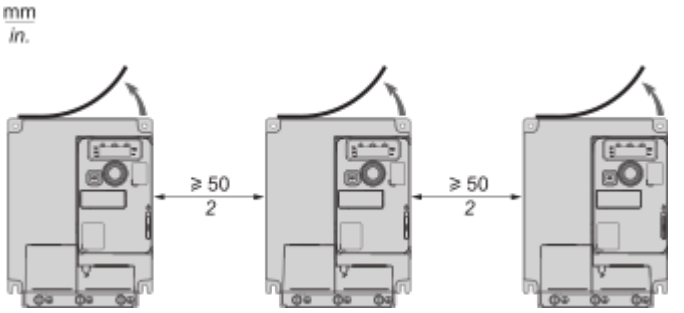
Free space ≥ 50 mm (2 in.) on each side, with vent cover fitted.
Mounting type A is suitable for drive operation at surrounding air temperature less or equal to 50 °C (122 °F)

Side by Side, Ventilation Cover Removed



Drives mounted side-by-side, vent cover should be removed. The degree of protection becomes IP20.

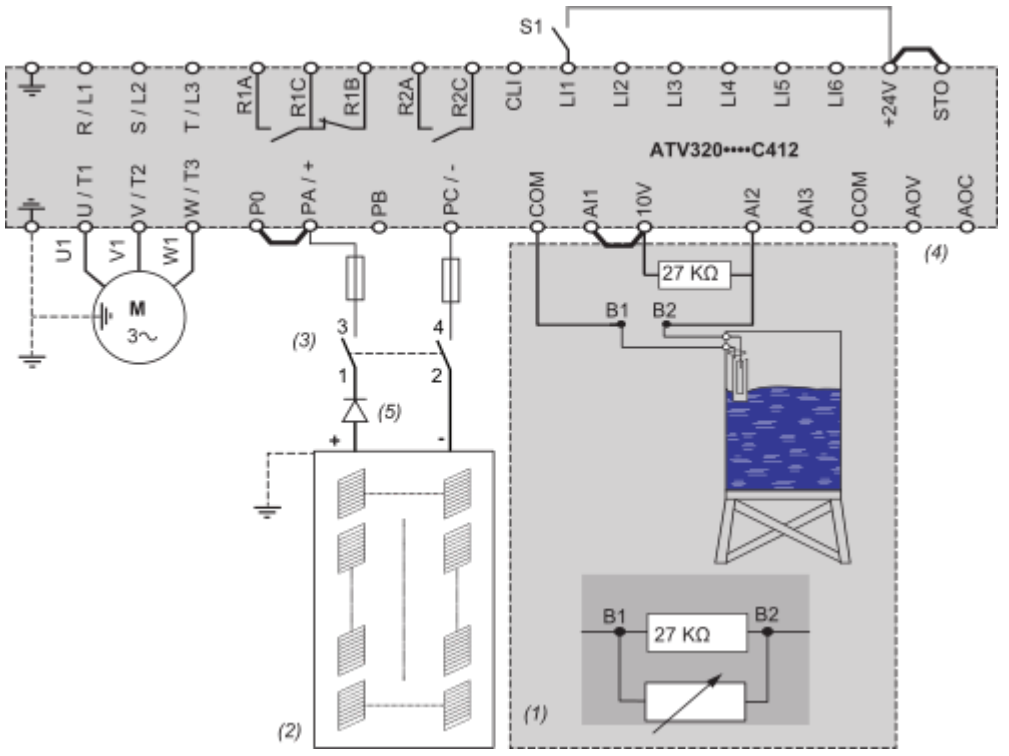
Individual, Ventilation Cover Removed



Free space ≥ 50 mm (2 in.) on each side. Vent cover should be removed for operation at surrounding air temperature above 50 °C (122 °F). The degree of protection becomes IP20.

Connections and Schema

Wiring

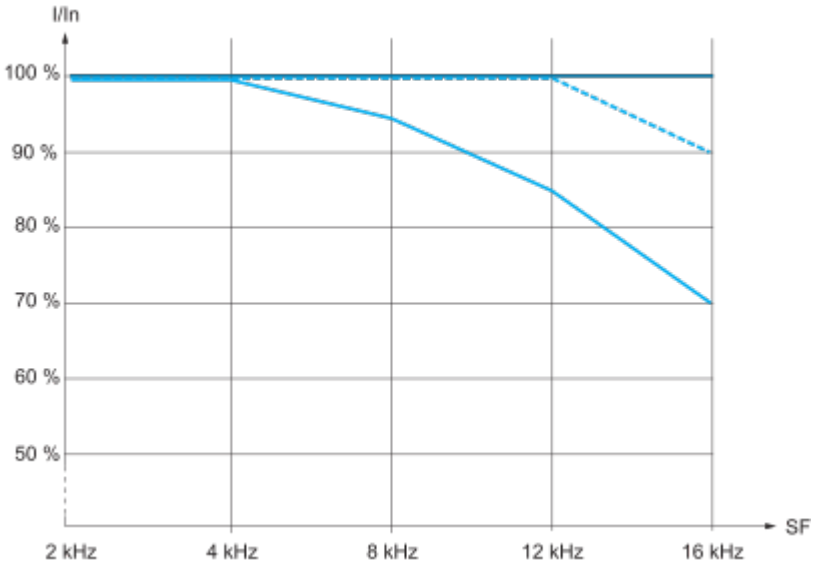


(1) Tank water / liquid probe is optional.
(2) The photovoltaic modules used shall comply with UL 1703. The solar panels and the drive input shall be in compliance with NEC article 690. For the photovoltaic installation ground connection, safety instructions and orientation, refer to the photovoltaic panel user manual.
(3) Protection according to the concerned voltage, current and according to the photovoltaic arrays manual.
(4) For AOC or AOV diagnostic values on ATV320 Solar drive.
(5) On some applications, a blocking diode is mandatory.

NOTE: Check that the Logic Input switch is on Source position:

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