

Schneider Series Service Manual

ATV312HU15N4

1. Description

Schneider Electric ATV312HU15N4 variable speed drive, ATV312, 2 HP, 4.2 kVA, 61 W, 380 to 500 V 3 phase supply

3. Product Information

Schneider Electric ATV312HU15N4 variable speed drive, ATV312, 2 HP, 4.2 kVA, 61 W, 380 to 500 V 3 phase supply

Main

Product destination

Asynchronous motors

Component name

ATV312

Motor power kW

1.5 kW

Maximum Horse Power Rating

2 hp

Supply frequency

50...60 Hz - 5...5 %

Phase

3 phase

Line current

6.4 A 380 V, I_{sc} = 5 kA

4.8 A 500 V

Apparent power

4.2 kVA

Maximum transient current

6.2 A 60 s

Power dissipation in W

61 W at nominal load

Speed range

1...50

Electrical connection

AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal 0.004 in² (2.5 mm²) AWG 14

L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 0.008 in² (5 mm²) AWG 10

Supply

Internal supply for logic inputs 19...30 V 100 mA overload and short-circuit protection

Internal supply for reference potentiometer (2.2 to 10 kOhm) 10...10.8 V 10 mA overload and short-circuit protection

IP degree of protection

IP20 on upper part without cover plate

IP21 on connection terminals

IP31 on upper part

IP41 on upper part

Option card

Communication card CANopen daisy chain

Communication card DeviceNet

Communication card Fipio

Communication card Modbus TCP

Communication card Profibus DP

Range of Product

Altivar 312

Product or Component Type

Variable speed drive

Product Specific Application

Simple machine

Communication Port Protocol

Modbus

CANopen

[Us] rated supply voltage

380...500 V - 15...10 %

EMC filter

Integrated

Complementary

Supply voltage limits

323...550 V

Continuous output current

4.1 A 4 kHz

Output frequency

0...500 Hz

Switching frequency

2...16 kHz adjustable

Braking torque

150 % 60 s with braking resistor

100 % with braking resistor continuously

150 % without braking resistor

Output voltage

<= power supply voltage

Tightening torque

AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 5.3 lbf.in (0.6 N.m)

L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- 10.6 lbf.in (1.2 N.m)

Insulation

Electrical between power and control

Analogue input type

AI1 configurable voltage 0...10 V 30 V max 30000 Ohm

AI2 configurable voltage +/- 10 V 30 V max 30000 Ohm

AI3 configurable current 0...20 mA 250 Ohm

Sampling duration

AI1, AI2, AI3 8 ms analog

LI1...LI6 4 ms discrete

Response time

AOV, AOC 8 ms analog

R1A, R1B, R1C, R2A, R2B 8 ms discrete

Linearity error

+/- 0.2 % output

Analogue output type

AOC configurable current 0...20 mA 800 Ohm 8 bits

AOV configurable voltage 0...10 V 470 Ohm 8 bits

Discrete input logic

Logic input not wired LI1...LI4), < 13 V

Negative logic (source) LI1...LI6), > 19 V

Positive logic (source) LI1...LI6), < 5 V, > 11 V

Discrete output type

Configurable relay logic R1A, R1B, R1C) 1 NO + 1 NC - 100000 cycles

Configurable relay logic R2A, R2B) NC - 100000 cycles

Minimum switching current

R1-R2 10 mA 5 V DC

Maximum switching current

R1-R2 2 A 250 V AC inductive, cos phi = 0.4 7 ms

R1-R2 2 A 30 V DC inductive, cos phi = 0.4 7 ms

R1-R2 5 A 250 V AC resistive, cos phi = 1 0 ms

R1-R2 5 A 30 V DC resistive, cos phi = 1 0 ms

Discrete input type

LI1...LI6) programmable 24 V, 0...100 mA PLC 3500 Ohm

Insulation resistance

>= 500 mOhm 500 V DC for 1 minute

Local signalling

1 LED (red) for drive voltage

Four 7-segment display units for CANopen bus status

Time constant

5 ms for reference change

Frequency resolution

Analog input 0.1...100 Hz

Display unit 0.1 Hz

Connector type

1 RJ45 Modbus/CANopen

Transmission Rate

10, 20, 50, 125, 250, 500 kbps or 1 Mbps CANopen

4800, 9600 or 19200 bps Modbus

Number of addresses

1...127 CANopen

1...247 Modbus

Number of drive

127 CANopen

31 Modbus

Outer dimension

382 x 239 x 170 mm

143 x 105 x 150 mm

184 x 149 x 157 mm

Discrete input number

6

Discrete output number

2

Analogue input number

3

Analogue output number

1

Physical interface

RS485 multidrop serial link

Transmission frame

RTU

Asynchronous motor control profile

Factory set : constant torque

Sensorless flux vector control with PWM type motor control signal

Transient overtorque

170...200 % of nominal motor torque

Acceleration and deceleration ramps

S, U or customized

Linear adjustable separately from 0.1 to 999.9 s

Motor slip compensation

Suppressable

Adjustable

Automatic whatever the load

Nominal switching frequency

4 kHz

Braking to standstill

By DC injection

Network Frequency

47.5...63 Hz

Prospective line Isc

5 kA

Protection type

Input phase breaks drive

Line supply overvoltage and undervoltage safety circuits drive

Line supply phase loss safety function, for three phases supply drive

Motor phase breaks drive

Overcurrent between output phases and earth (on power up only) drive

Overheating protection drive

Short-circuit between motor phases drive

Thermal protection motor

Width

4.2 in (107 mm)

Height

5.6 in (143 mm)

Depth

6.0 in (152 mm)

Net Weight

4.0 lb(US) (1.8 kg)

Environment

Dielectric strength

2410 V DC between earth and power terminals

3400 V AC between control and power terminals

Protective treatment

TC

Vibration resistance

1 gn (f= 13...150 Hz) conforming to EN/IEC 60068-2-6

1.5 mm (f= 3...13 Hz) conforming to EN/IEC 60068-2-6

Shock resistance

15 gn 11 ms EN/IEC 60068-2-27

Relative humidity

5...95 % without condensation IEC 60068-2-3

5...95 % without dripping water IEC 60068-2-3

Operating altitude

<= 3280.84 ft (1000 m) without derating

3280.84...9842.52 ft (1000...3000 m) with current derating 1 % per 100 m

Operating position

Vertical +/- 10 degree

Product Certifications

UL

DNV

CSA

C-tick

NOM

GOST

Marking

CE

Standards

IEC 61800-3

IEC 61800-5-1

Assembly style

With heat sink

Electromagnetic compatibility

1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5

Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4

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

Regulation loop

Frequency PI regulator

Pollution degree

2

Ambient air temperature for operation

14...122 °F (-10...50 °C) without derating with protective cover on top of the drive)

14...140 °F (-10...60 °C) with derating factor without protective cover on top of the drive)

Ambient Air Temperature for Storage

-13...158 °F (-25...70 °C)

Ordering and shipping details

Category

US1CP4B22152

Discount Schedule

CP4B

GTIN

3606480077586

Returnability

No

Packing Units
Unit Type of Package 1
PCE
Nbr. of units in pkg.
1
Package 1 Height
6.691 in (16.996 cm)
Package 1 Width
6.763 in (17.179 cm)
Package 1 Length
8.12 in (20.62 cm)
Package weight(Lbs)
4.348 lb(US) (1.972 kg)
Manufacturer Schneider Electric
Product Line ATV312
Part Number ATV312HU15N4
EAN 3606480077586
Weight 5.00 lbs (2.27 kg)
Type Speed drive
Speed Ratio 1:50
Motor Compatibility For asynchronous motors
Motor Power 1.5 kW (2 HP)
Control Type Sensorless vector PWM
Peak Current 6.2 A for 60 sec
Line Current 6.4 A at 380 V; 4.8 A at 500 V
Input Voltage 380-500 V, $\pm 15-10\%$
Frequency Range 50-60 Hz, $\pm 5\%$
Phase Type 3-phase
EMC Filter Integrated
Braking Torque 150% with/without resistor
Communication Protocols Modbus, CANopen
Apparent Power 4.2 kVA