

Schneider Series Service Manual

ATV71HD37N4

1. Description

The Schneider Electric ATV71HD37N4 is a variable-speed drive engineered for efficient motor control. With a rated motor power of 37 kW (50 hp), it is suitable for various applications requiring precise speed adjustments.

2. Specifications

Specification	Value
Manufacturer	Schneider Electric
Product	Type Variable Speed Drive
Product	Line Altivar 71
Part	Number ATV71HD37N4
EAN	3389118069527
Weight	75.00 lbs (34.02 kg)
Maximum	Transient Current 130 A for 2 s, 118.5 A for 60 s
Motor	Power 37 kW / 50 hp
EMC	Filter Integrated
Maximum	Motor Cable Length 100 m shielded, 200 m unshielded
Input	Voltage 380-480 V AC
Graphic	Terminal Included
Apparent	Power 55.3 kVA at 380 V
Phase	3-phase
Frequency	50/60 Hz
Nominal	Output Current 65 A at 460 V, 79 A at 380 V

3. Product Information

The Schneider Electric ATV71HD37N4 is a variable-speed drive engineered for efficient motor control. With a rated motor power of 37 kW (50 hp), it is suitable for various applications requiring precise speed adjustments.

Technical specifications for ATV71HD37N4

Manufacturer Schneider Electric

Product Type Variable Speed Drive

Product Line Altivar 71

Part Number ATV71HD37N4

EAN 3389118069527

Weight 75.00 lbs (34.02 kg)

Maximum Transient Current 130 A for 2 s, 118.5 A for 60 s

Motor Power 37 kW / 50 hp

EMC Filter Integrated

Maximum Motor Cable Length 100 m shielded, 200 m unshielded

Input Voltage 380-480 V AC

Graphic Terminal Included

Apparent Power 55.3 kVA at 380 V

Phase 3-phase

Frequency 50/60 Hz

Nominal Output Current 65 A at 460 V, 79 A at 380 V

Description

The Schneider Electric ATV71HD37N4 belongs to the Altivar 71 series, recognized for its efficiency in controlling variable-speed applications. Weighing 27.72 kg, this variable-speed drive can handle a substantial motor power of 37 kW or 50 hp, making it versatile for various industrial setups. It operates effectively with an input voltage range of 380-480 V AC on a three-phase system, with a frequency rating of 50/60 Hz.

The ATV71HD37N4 drive supports a maximum transient current of 130 A for brief periods and 118.5 A for 60 seconds, enabling it to manage surges during startup or load changes. It provides nominal output currents of 65 A when operating at 460 V and 79 A at 380 V, thus ensuring sufficient power delivery.

For added convenience, an integrated EMC filter ensures compliance with electromagnetic standards, contributing to a stable operational environment. This drive is designed to work with motor cable lengths of up to 100 meters if shielded or 200 meters if unshielded, providing installation flexibility. A graphic terminal is also included, enabling users to monitor and configure settings intuitively. Overall, the ATV71HD37N4 is a robust choice for applications requiring precise control over motor speeds and enhanced operational efficiency.

Range of Product

Altivar 71

Product or Component Type

Variable speed drive

Product Specific Application

Complex, high-power machines

Component name

ATV71

Motor power kW

37 kW, 3 phase 380...480 V

Maximum Horse Power Rating

50 hp, 3 phase 380...480 V

Maximum motor cable length

328.08 ft (100 m) shielded cable

656.2 ft (200 m) unshielded cable

power supply voltage

380...480 V - 15...10 %

Phase

3 phase

Line current

69 A 480 V 3 phase 37 kW / 50 hp

84 A 380 V 3 phase 37 kW / 50 hp

EMC filter

Integrated

Assembly style

With heat sink

Apparent power

55.3 kVA 380 V 3 phase 37 kW / 50 hp

Prospective line Isc

22 kA 3 phase

Nominal output current

65 A 2.5 kHz 460 V 3 phase 37 kW / 50 hp

79 A 2.5 kHz 380 V 3 phase 37 kW / 50 hp

Maximum transient current

130 A 2 s 3 phase 37 kW / 50 hp

118.5 A 60 s 3 phase 37 kW / 50 hp

Output frequency

0.1...599 Hz

Nominal switching frequency

2.5 kHz

Switching frequency

1...16 kHz adjustable

2.5...16 kHz with derating factor

Asynchronous motor control profile

ENA (Energy adaptation) system for unbalanced loads

Voltage/frequency ratio (2 or 5 points)

Flux vector control (FVC) with sensor (current vector)

Sensorless flux vector control (SFVC) (voltage or current vector)

Type of polarization

No impedance Modbus

Complementary

Product destination

Asynchronous motors

Synchronous motors

power supply voltage limits

323...528 V

power supply frequency

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

power supply frequency limits

47.5...63 Hz

Speed range

1...100 asynchronous motor in open-loop mode, without speed feedback

1...1000 asynchronous motor in closed-loop mode with encoder feedback

1...50 synchronous motor in open-loop mode, without speed feedback

Speed accuracy

+/- 0.01 % of nominal speed in closed-loop mode with encoder feedback 0.2 Tn to Tn

+/- 10 % of nominal slip without speed feedback 0.2 Tn to Tn

Torque accuracy

+/- 15 % in open-loop mode, without speed feedback

+/- 5 % in closed-loop mode with encoder feedback

Transient overtorque

170 % +/- 10 % 60 s every 10 minutes

220 % +/- 10 % 2 s

Braking torque

<= 150 % with braking or hoist resistor

30 % without braking resistor

Synchronous motor control profile

Vector control without speed feedback

Regulation loop

Adjustable PI regulator

Motor slip compensation

Automatic whatever the load

Suppressable

Not available in voltage/frequency ratio (2 or 5 points)

Adjustable

diagnostic

1 LED (red) for drive voltage

Output voltage

<= power supply voltage

Insulation

Electrical between power and control

type of cable for mounting in an enclosure

With a NEMA Type1 kit 3 UL 508 cable 104 °F (40 °C), copper 75 °C / PVC

With an IP21 or an IP31 kit 3 IEC cable 104 °F (40 °C), copper 70 °C / PVC

Without mounting kit 1 IEC cable 113 °F (45 °C), copper 70 °C / PVC

Without mounting kit 1 IEC cable 113 °F (45 °C), copper 90 °C / XLPE/EPR

Electrical connection

Terminal 2.5 mm², AWG 14 AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR)

Terminal 50 mm², AWG 1/0 L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)

Tightening torque

5.3 lbf.in (0.6 N.m) AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR)

106.2 lbf.in (12 N.m), 102.2 lb.in L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)

Supply

Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 %, <10 mA overload and short-circuit protection

Internal supply 24 V DC 21...27 V), <200 mA overload and short-circuit protection

Analogue input number

2

Analogue input type

AI1-/AI1+ bipolar differential voltage +/- 10 V DC 24 V max 11 bits + sign

AI2 software-configurable current 0...20 mA 242 Ohm 11 bits

AI2 software-configurable voltage 0...10 V DC 24 V max 30000 Ohm 11 bits

input sampling time

2 ms +/- 0.5 ms AI1-/AI1+) - analog

2 ms +/- 0.5 ms AI2) - analog

2 ms +/- 0.5 ms LI1...LI5) - discrete

2 ms +/- 0.5 ms LI6)if configured as logic input - discrete

Response time

<= 100 ms in STO (Safe Torque Off)

AO1 2 ms +/- 0.5 ms analog

R1A, R1B, R1C 7 ms +/- 0.5 ms discrete

R2A, R2B 7 ms +/- 0.5 ms discrete

absolute accuracy precision

+/- 0.6 % AI1-/AI1+) for a temperature variation 60 °C

+/- 0.6 % AI2) for a temperature variation 60 °C

+/- 1 % AO1) for a temperature variation 60 °C

Linearity error

+/- 0.15 % of maximum value AI1-/AI1+, AI2)

+/- 0.2 % AO1)

Analogue output number

1

Analogue output type

AO1 software-configurable logic output 10 V 20 mA

AO1 software-configurable current 0...20 mA 500 Ohm 10 bits

AO1 software-configurable voltage 0...10 V DC 470 Ohm 10 bits

Discrete output number

2

Discrete output type

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

Configurable relay logic R2A, R2B) NO - 100000 cycles

Minimum switching current

3 mA 24 V DC configurable relay logic

Maximum switching current

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

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

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

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

Discrete input number

7

Discrete input type

LI1...LI5 programmable 24 V DC level 1 PLC 3500 Ohm
 LI6 switch-configurable 24 V DC level 1 PLC 3500 Ohm
 LI6 switch-configurable PTC probe 0...6 1500 Ohm
 PWR safety input 24 V DC 1500 Ohm ISO 13849-1 level d
 Discrete input logic
 Negative logic (sink) LI1...LI5), > 16 V, < 10 V
 Positive logic (source) LI1...LI5), < 5 V, > 11 V
 Negative logic (sink) LI6)if configured as logic input, > 16 V, < 10 V
 Positive logic (source) LI6)if configured as logic input, < 5 V, > 11 V
 Acceleration and deceleration ramps
 Automatic adaptation of ramp if braking capacity exceeded, by using resistor
 Linear adjustable separately from 0.01 to 9000 s
 S, U or customized
 Braking to standstill
 By DC injection
 Protection type
 Against exceeding limit speed drive
 Against input phase loss drive
 Break on the control circuit drive
 Input phase breaks drive
 Line supply overvoltage drive
 Line supply undervoltage drive
 Overcurrent between output phases and earth drive
 Overheating protection drive
 Overvoltages on the DC bus drive
 Short-circuit between motor phases drive
 Thermal protection drive
 Motor phase break motor
 Power removal motor
 Thermal protection motor
 Insulation resistance
 > 1 mOhm 500 V DC for 1 minute to earth
 Frequency resolution
 Analog input 0.024/50 Hz
 Display unit 0.1 Hz
 Communication Port Protocol
 Modbus
 CANopen
 Connector type
 1 RJ45 on front face)Modbus
 1 RJ45 on terminal)Modbus
 Male SUB-D 9 on RJ45CANopen
 Physical interface
 2-wire RS 485 Modbus
 Transmission frame
 RTU Modbus
 Transmission rate
 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps Modbus on terminal
 9600 bps, 19200 bps Modbus on front face
 20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps CANopen
 Data format
 8 bits, 1 stop, even parity Modbus on front face
 8 bits, odd even or no configurable parity Modbus on terminal
 Number of addresses
 1...127 CANopen
 1...247 Modbus
 Method of access
 Slave CANopen
 Marking

CE

Operating position

Vertical +/- 10 degree

Height

21.7 in (550 mm)

Depth

10.5 in (266 mm)

Width

9.4 in (240 mm)

Net Weight

81.6 lb(US) (37 kg)

Functionality

Full

Specific application

Other applications

Option card

Communication card CC-Link

Controller inside programmable card

Communication card DeviceNet

Communication card EtherNet/IP

Communication card Fipio

I/O extension card

Communication card Interbus-S

Interface card for encoder

Communication card Modbus Plus

Communication card Modbus TCP

Communication card Modbus/Uni-Telway

Overhead crane card

Communication card Profibus DP

Communication card Profibus DP V1

Environment

Noise level

64 dB 86/188/EEC

Dielectric strength

3535 V DC between earth and power terminals

5092 V DC between control and power terminals

Electromagnetic compatibility

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

Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6

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

Voltage dips and interruptions immunity test conforming to IEC 61000-4-11

Standards

IEC 61800-5-1

IEC 61800-3

IEC 61800-3 environments 1 category C3

IEC 61800-3 environments 2 category C3

EN 55011 class A group 2

IEC 60721-3-3 class 3S2

IEC 60721-3-3 class 3C1

UL Type 1

Product Certifications

UL

GOST

CSA

C-tick

NOM 117

Pollution degree

2 IEC 61800-5-1

3 UL 840

IP degree of protection

IP20

Vibration resistance

1 gn (f= 13...200 Hz) conforming to IEC 60068-2-6

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

Shock resistance

15 gn 11 ms IEC 60068-2-27

Relative humidity

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

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

Ambient air temperature for operation

14...122 °F (-10...50 °C) (without derating)

Ambient Air Temperature for Storage

-13...158 °F (-25...70 °C)

Operating altitude

<= 3280.84 ft (1000 m) without derating

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

Ordering and shipping details

Category

US1CP4C22131

Discount Schedule

CP4C

GTIN

3389118069527

Returnability

No

Packing Units

Unit Type of Package 1

PCE

Nbr. of units in pkg.

1

Package 1 Height

11.6 in (29.5 cm)

Package 1 Width

15.7 in (40.0 cm)

Package 1 Length

27.6 in (70.0 cm)

Package weight(Lbs)

63.9 lb(US) (29.0 kg)