



# variable speed drive, Altivar Machine ATV340, 2.2kW, heavy duty, 400V, 3 phases, Ethernet

ATV340U22N4E

#### Main

Range of product	Altivar Machine ATV340
product or component type	Variable speed drive
Product specific application	Machine
variant	Standard version
mounting mode	Cabinet mount
Communication port protocol	Modbus TCP Modbus serial EtherNet/IP
Network number of phases	3 phases
Supply frequency	5060 Hz +/- 5 %
[Us] rated supply voltage	380480 V - 1510 %
Nominal output current	5.6 A
Motor power kW	3 kW for normal duty 2.2 kW for heavy duty
Motor power hp	3 hp for normal duty 3 hp for heavy duty
EMC filter	Class C3 EMC filter integrated
IP degree of protection	IP20

# Complementary

Discrete input number	5	
Discrete input type	PTI programmable as pulse input: 030 kHz, 24 V DC (30 V) DI1DI5 safe torque off, 24 V DC (30 V), impedance: 3.5 kOhm programmable	
number of preset speeds	16 preset speeds	
Discrete output number	2.0	
Discrete output type	Programmable output DQ1, DQ2 30 V DC 100 mA	
Analogue input number	2	
Analogue input type	Al1 software-configurable current: 020 mA, impedance: 250 Ohm, resolution 12 bits Al1 software-configurable temperature probe or water level sensor Al1 software-configurable voltage: 010 V DC, impedance: 31.5 kOhm, resolution 12 bits Al2 software-configurable voltage: -1010 V DC, impedance: 31.5 kOhm, resolution 12 bits	
Analogue output number	1	

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Analogue output type	Software-configurable voltage AQ1: 010 V DC impedance 470 Ohm, resolution 10	
	bits	
	Software-configurable current AQ1: 020 mA impedance 500 Ohm, resolution 10 bits	
Relay output number	2	
Output voltage	<= power supply voltage	
Relay output type	Relay outputs R1A	
	Relay outputs R1C electrical durability 100000 cycles Relay outputs R2A	
	Relay outputs R2C electrical durability 100000 cycles	
Maximum switching current	Relay output R1C on resistive load, cos phi = 1: 3 A at 250 V AC	
	Relay output R1C on resistive load, cos phi = 1: 3 A at 30 V DC	
	Relay output R1C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R1C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC	
	Relay output R2C on resistive load, cos phi = 1: 5 A at 250 V AC	
	Relay output R2C on resistive load, cos phi = 1: 5 A at 30 V DC	
	Relay output R2C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R2C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC	
Minimum switching current	Relay output R1B: 5 mA at 24 V DC	
	Relay output R2C: 5 mA at 24 V DC	
Physical interface	2-wire RS 485	
Connector type	3 RJ45	
Method of access	Slave Modbus RTU Slave Modbus TCP	
Transmission rate	4.8 kbit/s 9.6 kbit/s	
	19.2 kbit/s	
	38.4 kbit/s	
Fransmission frame	RTU	
Number of addresses	1247	
Data format	8 bits, configurable odd, even or no parity	
Type of polarization	No impedance	
quadrant operation possible	True	
Asynchronous motor control	Constant torque standard	
orofile	Variable torque standard	
	Optimized torque mode	
Synchronous motor control profile	Permanent magnet motor Reluctance motor	
Pollution degree	2 conforming to IEC 61800-5-1	
Maximum output frequency	0.599 kHz	
Acceleration and deceleration	S, U or customized	
ramps	Linear adjustable separately from 0.019999 s	
Motor slip compensation	Not available in permanent magnet motor law	
	Automatic whatever the load Adjustable	
	Can be suppressed	
Switching frequency	216 kHz adjustable	
· -	416 kHz with derating factor	
Nominal switching frequency	4 kHz	
Braking to standstill	By DC injection	
Brake chopper integrated	True	
Line current	6.6 A at 380 V (normal duty)	
	5.3 A at 480 V (normal duty)	
	8.4 A at 380 V (heavy duty)	
	8.4 A at 380 V (heavy duty) 6.6 A at 480 V (heavy duty)	

Line current	8.4 A at 380 V without line choke (heavy duty)	
	6.6 A at 480 V without line choke (heavy duty)	
	6.6 A at 380 V with external line choke (normal duty)	
	5.3 A at 480 V with external line choke (normal duty)	
	5.1 A at 380 V with external line choke (heavy duty)	
	4.1 A at 480 V with external line choke (heavy duty)	
Maximum input current	8.4 A	
Maximum output voltage	480 V	
Apparent power	5.2 kVA at 480 V (normal duty)	
	5.5 kVA at 480 V (heavy duty)	
Maximum transient current	7.9 A during 60 s (normal duty)	
	9.7 A during 2 s (normal duty)	
	10.1 A during 2 s (heavy duty)	
	8 A during 60 s (heavy duty)	
Electrical connection	Screw terminal, clamping capacity: 1.54 mm² for line side	
	Screw terminal, clamping capacity: 46 mm² for DC bus	
	Screw terminal, clamping capacity: 1.54 mm² for motor	
	Screw terminal, clamping capacity: 0.22.5 mm² for control	
Prospective line Isc	5 kA	
Base load current at high overload	5.6 A	
Base load current at low overload	7.2 A	
Power dissipation in W	Natural convection: 65 W at 380 V, switching frequency 4 kHz (heavy duty)	
	Forced convection: 65 W at 380 V, switching frequency 4 kHz (heavy duty)	
	Natural convection: 80 W at 380 V, switching frequency 4 kHz (normal duty)	
	Forced convection: 80 W at 380 V, switching frequency 4 kHz (normal duty)	
Electrical connection	Line side: screw terminal 1.54 mm²/AWG 14AWG 12	
	DC bus: screw terminal 46 mm²/AWG 12AWG 10	
	Motor: screw terminal 1.54 mm²/AWG 14AWG 12	
	Control: screw terminal 0.22.5 mm²/AWG 24AWG 12	
With safety function Safely Limited Speed (SLS)	True	
With safety function Safe brake management (SBC/SBT)	True	
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	

Safe torque off: motor Motor phase loss: motor			
•			
Thermal protection: drive			
Safe torque off: drive Overheating: drive Overcurrent: drive Output overcurrent between motor phase and earth: drive Output overcurrent between motor phases: drive Short-circuit between motor phase and earth: drive Short-circuit between motor phase and earth: drive Short-circuit between motor phases: drive Motor phase loss: drive DC Bus overvoltage: drive Line supply overvoltage: drive Line supply undervoltage: drive			
			Input supply loss: drive Exceeding limit speed: drive
			Break on the control circuit: drive
			Broak of the control cheat. diffe
			85.0 mm
			270.0 mm
			232.5 mm
			1.8 kg
			7.2 A at 4 kHz for normal duty 5.6 A at 4 kHz for heavy duty

# **Environment**

Operating altitude	<= 3000 m with current derating above 1000m	
Operating position	Vertical +/- 10 degree	
Product certifications	UL CSA TÜV EAC CTick	
marking	CE	
Standards	IEC 61800-3 IEC 61800-5-1 IEC 60721-3 IEC 61508 IEC 13849-1 UL 618000-5-1 UL 508C	
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	
Environmental class (during operation)	Class 3C3 according to IEC 60721-3-3 Class 3S3 according to IEC 60721-3-3	
Maximum acceleration under shock impact (during operation)	70 m/s² at 22 ms	
Maximum acceleration under vibrational stress (during operation)	5 m/s² at 9200 Hz	
Maximum deflection under vibratory load (during operation)	1.5 mm at 29 Hz	
Permitted relative humidity (during operation)	Class 3K5 according to EN 60721-3	
Volume of cooling air	18.0 m3/h	
Type of cooling	Forced convection	
Overvoltage category	Class III	

Regulation loop	Adjustable PID regulator
Noise level	55.4 dB
Pollution degree	2
Ambient air transport temperature	-4070 °C
Ambient air temperature for operation	-1550 °C without derating (vertical position) 5060 °C with derating factor (vertical position)
Ambient air temperature for storage	-4070 °C
Isolation	Between power and control terminals

# **Packing Units**

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	11.000 cm
Package 1 Width	37.500 cm
Package 1 Length	31.500 cm
Package 1 Weight	2.524 kg
Unit Type of Package 2	S06
Number of Units in Package 2	14
Package 2 Height	75.000 cm
Package 2 Width	60.000 cm
Package 2 Length	80.000 cm
Package 2 Weight	48.182 kg

# Sustainability Screen 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-CO2 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**

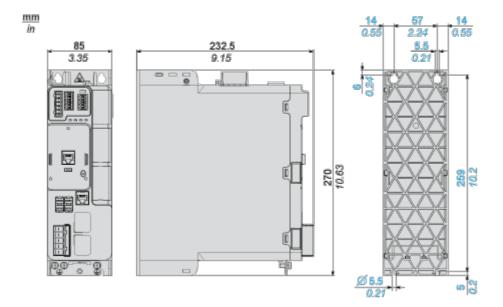
Reach Regulation	REACh Declaration	
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)	
China Rohs Regulation	China RoHS declaration	
Environmental Disclosure	Product Environmental Profile	
Weee	The product must be disposed on European Union markets following specific waste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

## ATV340U22N4E

#### **Dimensions Drawings**

#### **Dimensions**

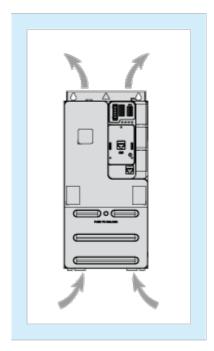
Views: Front - Left - Rear

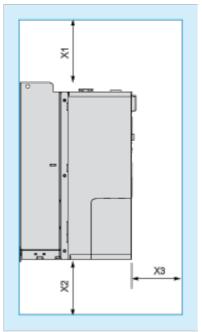


## ATV340U22N4E

Mounting and Clearance

#### Clearance





Dimensions in mm

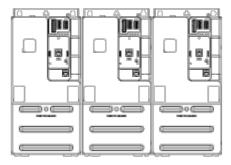
X1	X2	X3
≥ 100	≥ 100	≥ 60

#### Dimensions in in.

X1	X2	Х3
≥ 3.94	≥ 3.94	≥ 2.36

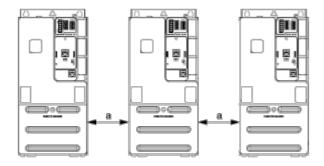
#### **Mounting Types**

#### Mounting Type A: Side by Side IP20



Possible, at ambient temperature ≤ 50 °C (122 °F)

#### Mounting Type B: Individual IP20



a 50 mm (1.97 in.) from 50...60°C, no restriction below 50°C

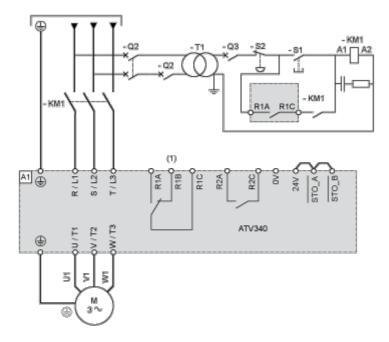
#### **ATV340U22N4E**

#### Connections and Schema

#### **Connections and Schema**

# Three-phase Power Supply with Upstream Breaking via Line Contactor Without Safety Function STO

Connection diagrams conforming to standards ISO13849 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1.



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

A1: Drive

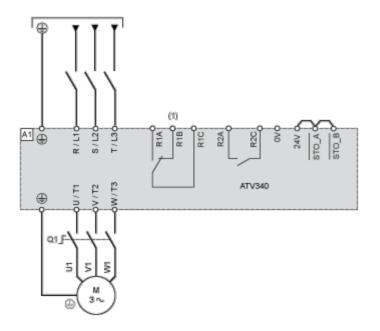
KM1 : Line ContactorQ2, Q3 : Circuit breakers

S1: PushbuttonS2: Emergency stop

T1: Transformer for control part

Three-phase Power Supply With Downstream Breaking via Switch Disconnector

#### ATV340U22N4E

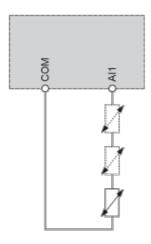


(1) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.

A1: Drive

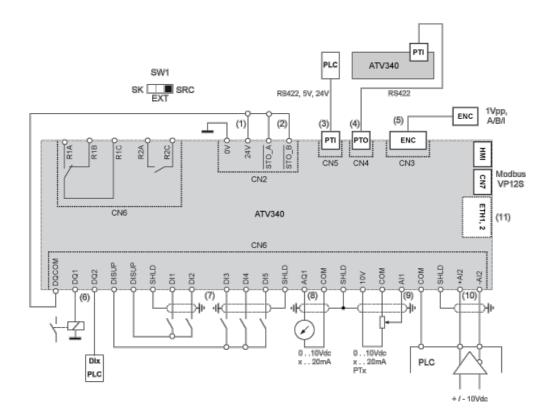
Q1: Switch disconnector

#### **Sensor Connection**



It is possible to connect either 1 or 3 sensors on terminals Al1.

#### **Control Block Wiring Diagram**

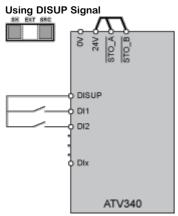


- (1) 24V supply (STO)
- (2) STO Safe Torque Off
- (3) PTI Pulse Train In
- (4) PTO Pulse Train Out
- (5) Motor Encoder connection
- (6) Digital outputs
- (7) Digital inputs
- (8) Analog output
- (9) Analog input
- (10) Differential Analog Input
- (11) Ethernet port (only on Ethernet drive version)

SW1: Sink/Source switch
R1A, R1B, R1C: Fault relay
R2A, R2C: Sequence relay

#### **Digital Inputs Wiring**

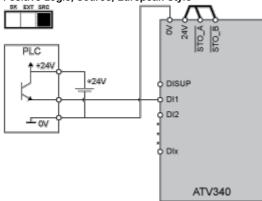
#### **Digital Inputs: Internal Supply**



In SRC position DISUP outputs 24 V. In SK position DISUP is connected to 0 V.

#### **Digital Inputs: External Supply**

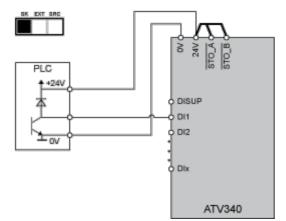
### Positive Logic, Source, European Style



# 

Digital Inputs: Internal supply Negative Logic, Sink, Asian Style

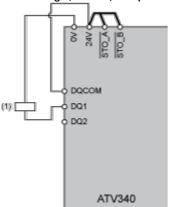
## ATV340U22N4E



#### **Digital Outputs Wiring**

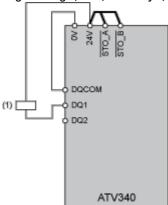
#### **Digital Outputs: Internal Supply**

Positive Logic, Source, European Style, DQCOM to +24V



(1) Relay or valve

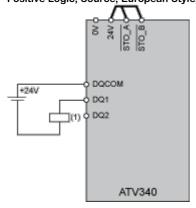
Negative Logic, Sink, Asian Style, DQCOM to 0V



(1) Relay or valve

#### **Digital Outputs: External Supply**

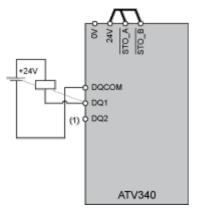
Positive Logic, Source, European Style, DQCOM to +24V



(1) Relay or valve

Negative Logic, Sink, Asian Style, DQCOM to 0V

## ATV340U22N4E

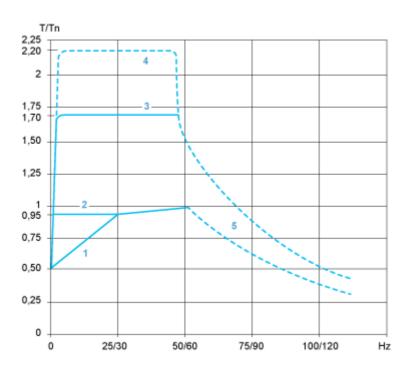


(1) Relay or valve

#### ATV340U22N4E

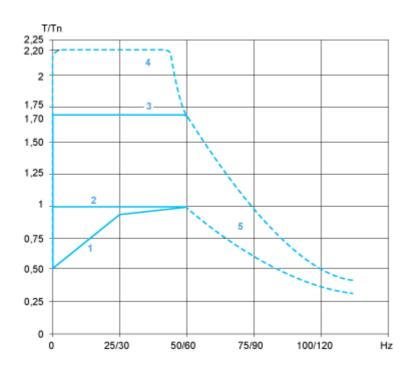
#### Performance Curves

#### **Open Loop Applications**



- 1: Self-cooled motor: continuous useful torque
- 2: Force-cooled motor: continuous useful torque
- 3: Overtorque for 60 s maximum
- 4: Transient overtorque for 2 s maximum
- 5: Torque in overspeed at constant power

#### **Closed Loop Applications**



- 1: Self-cooled motor: continuous useful torque
- 2: Force-cooled motor: continuous useful torque
- 3: Overtorque for 60 s maximum
- 4: Transient overtorque for 2 s maximum
- 5: Torque in overspeed at constant power