

ATV340U40N4E

variable speed drive - 4kW- 400V - 3 phases -
ATV340 Ethernet

Product availability : Stock - Normally stocked in distribution facility



Main

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|----------------------------------|---|
| Range of product | Altivar Machine ATV340 |
| Product or component type | Variable speed drive |
| Device application | Machine |
| Device short name | ATV340 |
| Variant | Standard version |
| Product destination | Asynchronous motors Synchronous motors |
| Mounting mode | Cabinet mount |
| EMC filter | Integrated with <= 20 m motor cable maxi conforming to EN/IEC 61800-3 category C3 |
| IP degree of protection | IP20 conforming to IEC 61800-5-1 IP20 conforming to IEC 60529 |
| Type of cooling | Forced convection |
| Supply frequency | 50...60 Hz +/- 5 % |
| Phase | 3 phases |
| [Us] rated supply voltage | 380...480 V - 15...10 % |
| Motor power kW | 5.5 kW (normal duty) 4 kW (heavy duty) |
| Motor power hp | 5 hp (heavy duty) 7 hp (normal duty) |
| Line current | 13.4 A at 380 V without line choke (heavy duty) 10.6 A at 480 V without line choke (heavy duty) 11.4 A at 380 V with external line choke (normal duty) 9 A at 480 V with external line choke (normal duty) 8.5 A at 380 V with external line choke (heavy duty) 6.8 A at 480 V with external line choke (heavy duty) |
| Prospective line I _{sc} | 5 kA |
| Apparent power | 9 kVA at 480 V (normal duty) 8.8 kVA at 480 V (heavy duty) |
| Continuous output current | 12.7 A at 4 kHz (normal duty) 9.3 A at 4 kHz (heavy duty) |

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

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| Maximum transient current | 14 A during 60 s (heavy duty) 14 A during 60 s (normal duty) 17.1 A during 2 s (normal duty) 16.7 A during 2 s (heavy duty) |
| Asynchronous motor control profile | Constant torque standard Variable torque standard Optimized torque mode |
| Synchronous motor control profile | Permanent magnet motor Reluctance motor |
| Speed drive output frequency | 0.1...599 Hz |
| Nominal switching frequency | 4 kHz |
| Switching frequency | 4...16 kHz with 2...16 kHz adjustable |
| Safety function | STO (safe torque off) SIL 3 |

Complementary

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|-------------------------------------|---|
| Number of preset speeds | 16 preset speeds |
| Communication port protocol | Ethernet/IP Modbus serial Modbus TCP |
| Option card | Slot GP-X : digital and analog I/O extension module Slot GP-X : output relay extension module Slot GP-ENC : 5/12 V digital encoder interface module Slot GP-ENC : analog encoder interface module Slot GP-ENC : resolver encoder interface module |
| Output voltage | <= power supply voltage |
| Permissible temporary current boost | 1.1 x I _n 60 s (normal duty) 1.5 x I _n 60 s (heavy duty) 1.35 x I _n 2 s (normal duty) 1.8 x I _n 2 s (heavy duty) |
| Motor slip compensation | Adjustable Automatic whatever the load Can be suppressed Not available in permanent magnet motor law |
| Acceleration and deceleration ramps | S, U or customized Linear adjustable separately from 0.01...9999 s |
| Braking to standstill | By DC injection |
| Protection type | Motor: thermal protection Drive: thermal protection Drive: overheating Drive: line supply overvoltage Drive: line supply undervoltage Drive: break on the control circuit Motor: safe torque off Drive: safe torque off Drive: short-circuit between motor phases Motor: motor phase loss 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: motor phase loss Drive: DC Bus overvoltage Drive: input supply loss Drive: exceeding limit speed |
| Frequency resolution | Display unit: 0.1 Hz Analog input: 0.012/50 Hz |
| Electrical connection | Screw terminal with clamping capacity: 1.5...4 mm ² , AWG 14...AWG 12 on line side Screw terminal with clamping capacity: 4...6 mm ² , AWG 12...AWG 10 on DC bus Screw terminal with clamping capacity: 1.5...4 mm ² , AWG 14...AWG 12 on motor Screw terminal with clamping capacity: 0.2...2.5 mm ² , AWG 24...AWG 12 on control |
| Connector type | Connector(s)1 x RJ45, Modbus serial on front face Connector(s)1 x RJ45, Modbus serial HMI on front face Connector(s)2 x RJ45, Ethernet IP/Modbus TCP on front face |
| Physical interface | 2-wire RS 485 Modbus serial |

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|---------------------------|---|
| Transmission frame | RTU Modbus serial |
| Transmission rate | 10/100 Mbit/s Ethernet IP/Modbus TCP 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps Modbus serial |
| Exchange mode | Half duplex, full duplex, autonegotiation Ethernet IP/Modbus TCP |
| Data format | 8 bits, configurable odd, even or no parity Modbus serial |
| Type of polarization | No impedance Modbus serial |
| Number of addresses | Modbus serial |
| Method of access | Slave Modbus TCP Slave Modbus RTU |
| Supply | External supply for digital inputs : 24 V DC (19...30 V), <= 1.25 mA, protection type: overload and short-circuit protection 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 |
| Local signalling | 4 LED, mono/dual colour local diagnostic 4 LED, dual colour communication module status |
| Width | 3.35 in (85 mm) |
| Height | 10.63 in (270 mm) |
| Depth | 9.15 in (232.5 mm) |
| Product weight | 5.07 lb(US) (2.3 kg) |
| Analogue input number | 2 |
| Analogue input type | AI1 software-configurable current : 0...20 mA, impedance 250 Ohm, resolution 12 bits AI1 software-configurable temperature probe or water level sensor AI1 software-configurable voltage : 0...10 V DC, impedance 31.5 kOhm, resolution 12 bits AI2 software-configurable voltage : - 10...10 V DC, impedance 20 kOhm, resolution 12 bits |
| Discrete input number | 8 |
| Discrete input type | PTI programmable as pulse input : 0...30 kHz, 24 V DC (<= 30 V) STOA, STOB safe torque off, 24 V DC (<= 30 V), impedance > 2.2 kOhm DI1...DI5 programmable, 24 V DC (<= 30 V), impedance 4.4 kOhm |
| Input compatibility | DI1...DI5 : discrete input level 1 PLC conforming to EN/IEC 61131-2 PTI : pulse input level 1 PLC conforming to IEC 65A-68 STOA, STOB : discrete input level 1 PLC conforming to EN/IEC 61131-2 |
| Discrete input logic | DI1...DI5 positive logic (source) at State 0: < 5 V, at State 1: > 11 V DI1...DI5 negative logic (sink) at State 0: > 16 V, at State 1: < 10 V PTI positive logic (source) at State 0: < 0.6 V, at State 1: > 2.5 V STOA, STOB positive logic (source) at State 0: < 5 V, at State 1: > 11 V |
| Analogue output number | 1 |
| Analogue output type | Software-configurable voltage AQ1 : 0...10 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AQ1 : 0...20 mA impedance 500 Ohm, resolution 10 bits |
| Input/Output type | Programmable as logic input/output DQ1 : 0...1 kHz, <= 30 V DC, 100 mA Programmable as logic input/output DQ2 : 0...1 kHz, <= 30 V DC, 100 mA |
| Sampling duration | Discrete input DI1...DI5 : 2 ms (+/- 0.5 ms) Pulse input PTI : 5 ms (+/- 1 ms) Analog input AI1, AI2 : 1 ms (+/- 1 ms) Analog output AQ1 : 5 ms (+/- 1 ms) Discrete input/output DQ1, DQ2 : 2 ms (+/- 0.5 ms) |
| Accuracy | Analog input AI1, AI2 : +/- 0.6 % for a temperature variation 60 °C Analog output AQ1 : +/- 1 % for a temperature variation 60 °C |
| Linearity error | AI1, AI2: +/- 0.15 % of maximum value analog input AQ1: +/- 0.2 % analog output |
| Relay output number | 2 |
| Relay output type | Configurable relay logic R1 : fault relay NO/NC 100000 cycles at maximum switching current Configurable relay logic R2 : sequence relay NO 100000 cycles at maximum switching current |
| Refresh time | Relay output R1, R2 : 5 ms (+/- 0.5 ms) |
| Minimum switching current | Relay output R1, R2 : 5 mA at 24 V DC |
| Maximum switching current | Relay output R1 : 3 A at 250 V AC on resistive load (cos phi = 1) Relay output R1 : 3 A at 30 V DC on resistive load (cos phi = 1) Relay output R1 : 2 A at 250 V AC on inductive load (cos phi = 0.4 and L/R = 7 ms) Relay output R1 : 2 A at 30 V DC on inductive load (cos phi = 0.4 and L/R = 7 ms) Relay output R2 : 5 A at 250 V AC on resistive load (cos phi = 1) Relay output R2 : 5 A at 30 V DC on resistive load (cos phi = 1) Relay output R2 : 2 A at 250 V AC on inductive load (cos phi = 0.4 and L/R = 7 ms) |

Environment

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|---------------------------------------|--|
| Isolation | Between power and control terminals |
| Insulation resistance | > 1 MOhm 500 V DC for 1 minute to earth |
| Noise level | 49.5 dB conforming to 86/188/EEC |
| Power dissipation in W | Natural convection : 99 W at 380 V, switching frequency 4 kHz (heavy duty) Forced convection : 99 W at 380 V, switching frequency 4 kHz (heavy duty) Natural convection : 130 W at 380 V, switching frequency 4 kHz (normal duty) Forced convection : 130 W at 380 V, switching frequency 4 kHz (normal duty) |
| Operating position | Vertical +/- 10 degree |
| 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 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6 |
| Pollution degree | 2 conforming to EN/IEC 61800-5-1 |
| Vibration resistance | 1.5 mm peak to peak (f= 2...19 Hz) conforming to EN/IEC 60721-3-3 class 3M3 1 gn (f= 9...200 Hz) conforming to EN/IEC 60721-3-3 class 3M3 |
| Shock resistance | 15 gn (duration = 11 ms) conforming to EN/IEC 60721-3-3 class 3M3 |
| Relative humidity | 5...95 % without condensation conforming to EN/IEC 60721-3-3 class 3K3 |
| Ambient air temperature for operation | 50...60 °C with current derating (heavy duty) 40...60 °C with current derating (normal duty) -15...50 °C without current derating (heavy duty) -15...40 °C without current derating (normal duty) |
| Ambient air temperature for storage | -40...158 °F (-40...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 |
| Environmental characteristic | Chemical pollution resistance class 3C3 conforming to EN/IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to EN/IEC 60721-3-3 |
| Standards | EN/IEC 61800-3 EN/IEC 61800-3 environment 1 category C2 EN/IEC 61800-3 environment 2 category C3 EN/IEC 61800-5-1 IEC 60721-3 IEC 61508 IEC 13849-1 UL 618000-5-1 |
| Product certifications | CSA TÜV UL REACH |
| Marking | CE |

Ordering and shipping details

| | |
|-----------------------|-------------------------------|
| Category | 22182 - ATV340 (1 THRU 25 HP) |
| Discount Schedule | CP4B |
| GTIN | 00785901717386 |
| Nbr. of units in pkg. | 1 |
| Package weight(Lbs) | 6.570000000000003 |
| Returnability | Y |
| Country of origin | ID |

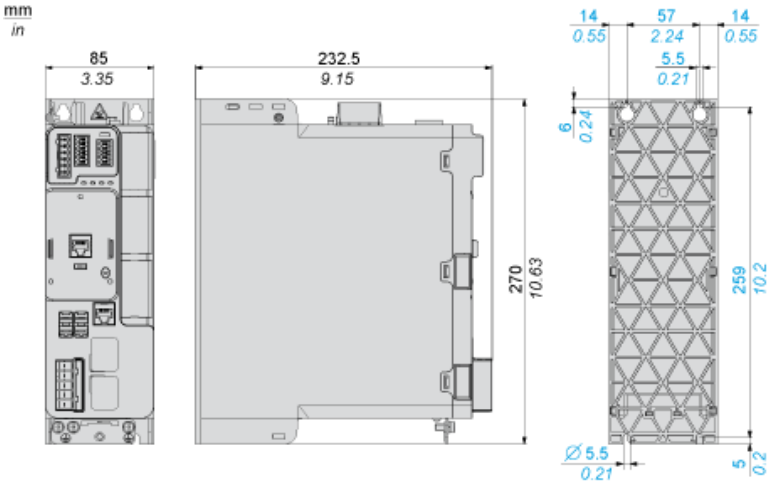
Offer Sustainability

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|--------------------------|---|
| Sustainable offer status | Green Premium product |
| RoHS (date code: YYWW) | Compliant - since 1635 - Schneider Electric declaration of conformity Schneider Electric declaration of conformity |
| REACH | Reference not containing SVHC above the threshold Reference not containing SVHC above the threshold |

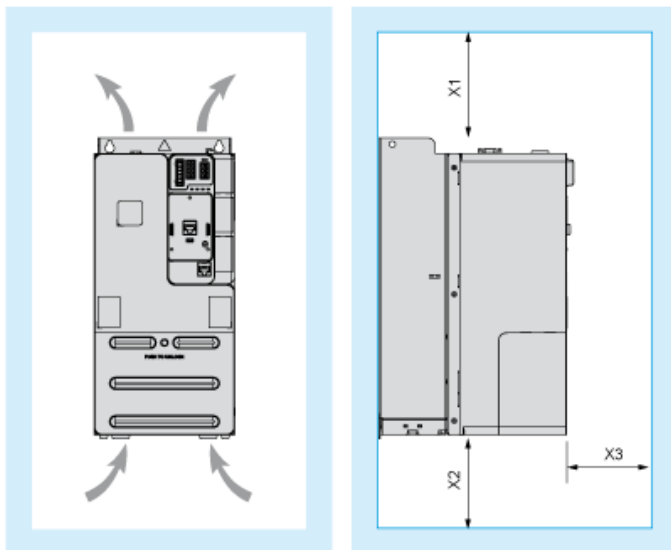
| | |
|----------------------------------|--|
| Product environmental profile | Available Product Environmental Profile |
| Product end of life instructions | Available |
| California proposition 65 | WARNING: This product can expose you to chemicals including: |
| - - - - - Substance 1 | Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. |
| - - - - - Substance 2 | Bisphenol A (BPA), which is known to the State of California to cause birth defects or other reproductive harm. |
| - - - - - More information | For more information go to www.p65warnings.ca.gov |

Dimensions

Views: Front - Left - Rear



Clearance



Dimensions in mm

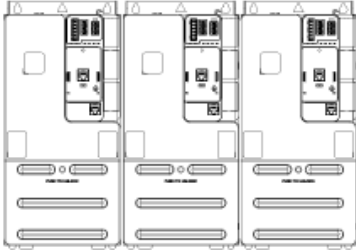
| X1 | X2 | X3 |
|-------|-------|------|
| ≥ 100 | ≥ 100 | ≥ 60 |

Dimensions in in.

| X1 | X2 | X3 |
|--------|--------|--------|
| ≥ 3.94 | ≥ 3.94 | ≥ 2.36 |

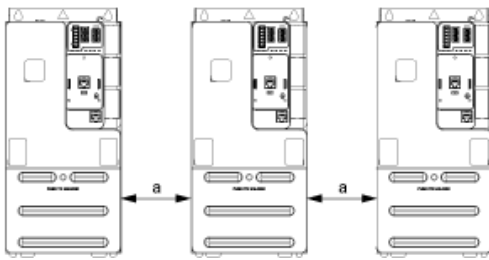
Mounting Types

Mounting Type A: Side by Side IP20



Possible, at ambient temperature $\leq 50\text{ }^{\circ}\text{C}$ (122 $^{\circ}\text{F}$)

Mounting Type B: Individual IP20

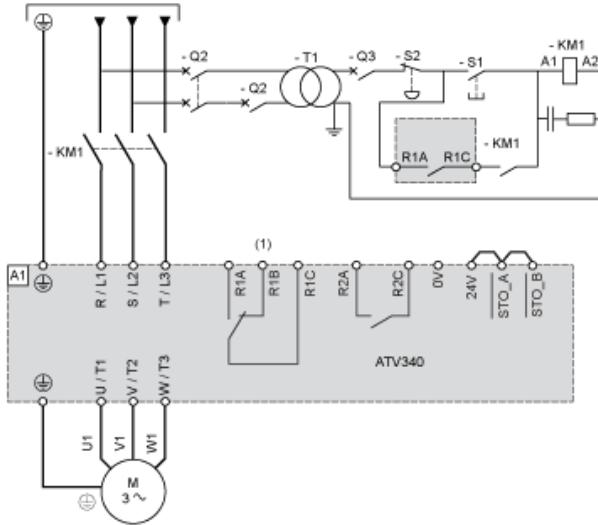


$a \geq 50\text{ mm}$ (1.97 in.) from 50...60 $^{\circ}\text{C}$, no restriction below 50 $^{\circ}\text{C}$

Connections and Schema

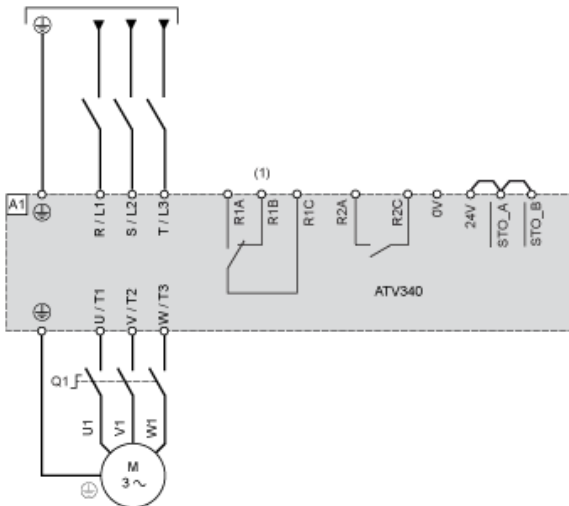
Three-phase Power Supply with Upstream Breaking via Line Contactor Without Safety Function STO

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.



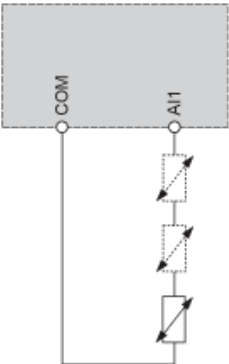
- (1) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.
- A1 : Drive
- KM1 : Line Contactor
- Q2, Q3 : Circuit breakers
- S1 : Pushbutton
- S2 : Emergency stop
- T1 : Transformer for control part

Three-phase Power Supply With Downstream Breaking via Switch Disconnect



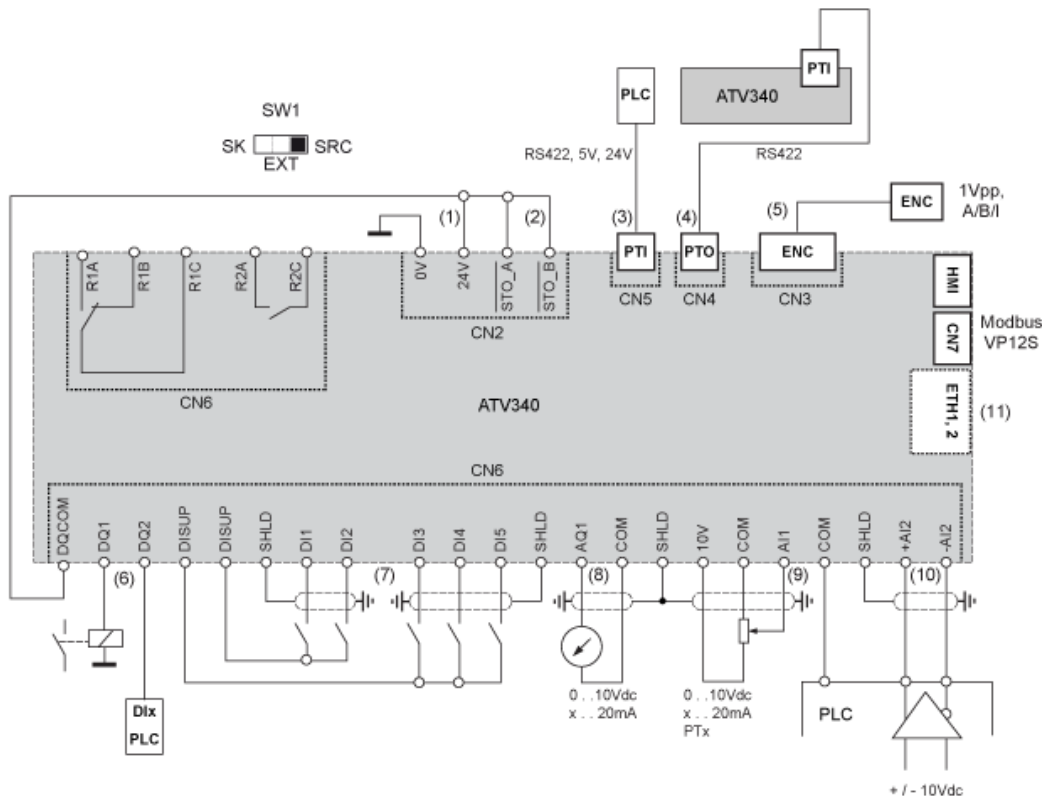
- (1) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.
- A1 : Drive
- Q1 : Switch disconnect

Sensor Connection



It is possible to connect either 1 or 3 sensors on terminals AI1.

Control Block Wiring Diagram

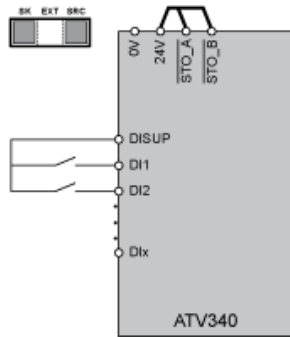


- (1) 24V supply (STO)
 - (2) STO - Safe Torque Off
 - (3) PTI - Pulse Train In
 - (4) PTO - Pulse Train Out
 - (5) Motor Encoder connection
 - (6) Digital outputs
 - (7) Digital inputs
 - (8) Analog output
 - (9) Analog input
 - (10) Differential Analog Input
 - (11) Ethernet port (only on Ethernet drive version)
- SW1 : Sink/Source switch
 R1A, R1B, R1C Relay
 R2A, R2C Sequence relay

Digital Inputs Wiring

Digital Inputs: Internal Supply

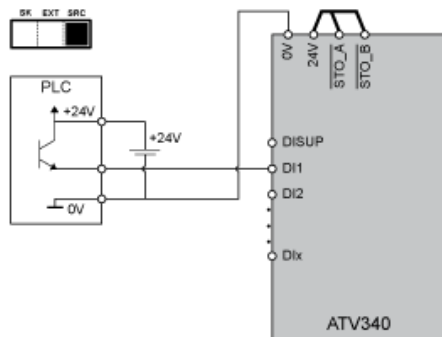
Using DISUP Signal



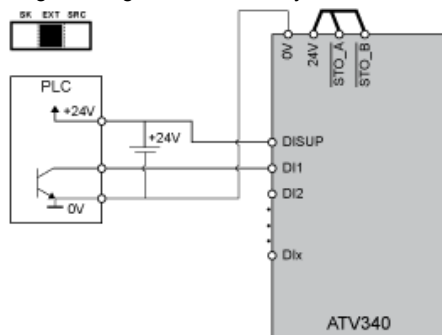
In SRC position DISUP outputs 24 V. In SK position DISUP is connected to 0 V.

Digital Inputs: External Supply

Positive Logic, Source, European Style

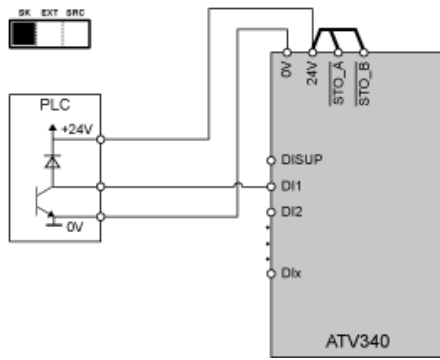


Negative Logic, Sink, Asian Style



Digital Inputs: Internal supply

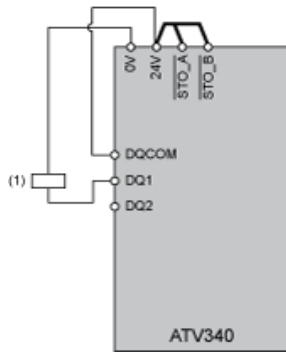
Negative Logic, Sink, Asian Style



Digital Outputs Wiring

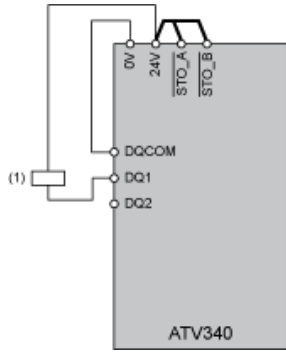
Digital Outputs: Internal Supply

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



(1) Relay or valve

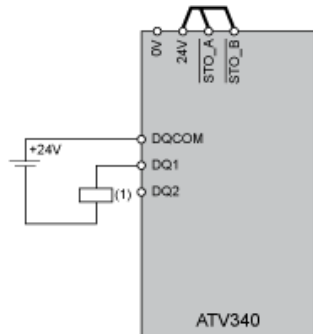
Negative Logic, Sink, Asian Style, DQCOM to 0V



(1) Relay or valve

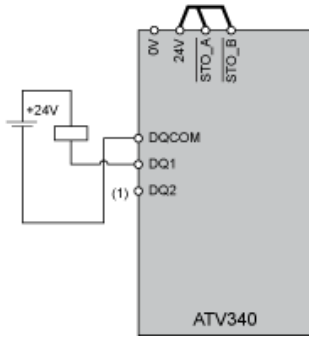
Digital Outputs: External Supply

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



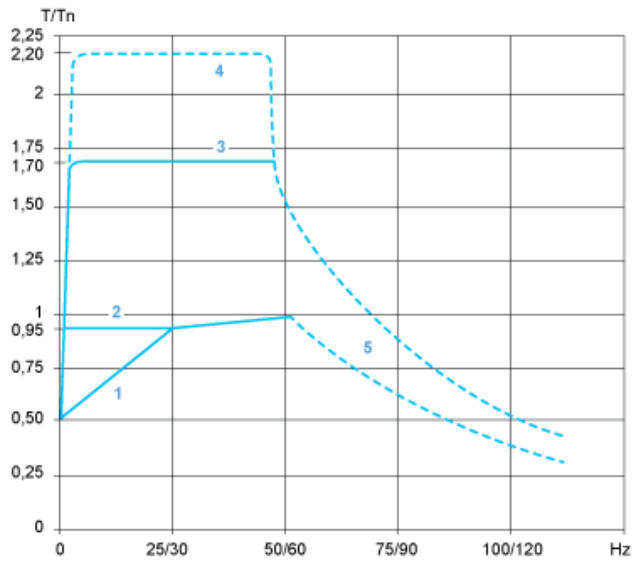
(1) Relay or valve

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



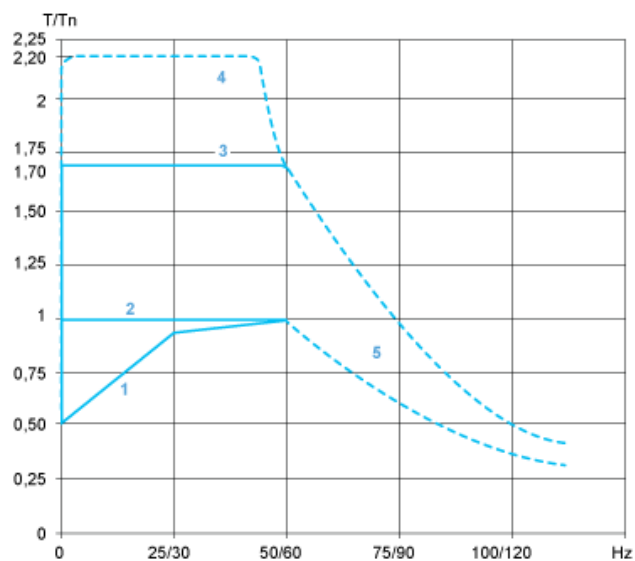
(1) Relay or valve

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