



## 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 serial  |
| Option card                  | Communication module, Profibus DP V1<br>Communication module, PROFINET<br>Communication module, DeviceNet<br>Communication module, CANopen<br>Communication module, EtherCAT |
| Network number of phases     | 3 phases   |
| Supply frequency             | 50...60 Hz +/- 5 %   |
| [Us] rated supply voltage    | 380...480 V - 15...10 %  |
| Nominal output current       | 32.0 A   |
| Motor power kW               | 18.5 KW for normal duty<br>15 kW for heavy duty  |
| Motor power hp               | 25 Hp for normal duty<br>20 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: 0...30 kHz, 24 V DC (30 V)<br>DI1...DI5 safe torque off, 24 V DC (30 V), impedance: 3.5 kOhm<br>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     | AI1 software-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 12 bits<br>AI1 software-configurable temperature probe or water level sensor<br>AI1 software-configurable voltage: 0...10 V DC, impedance: 31.5 kOhm, resolution 12 bits<br>AI2 software-configurable voltage: - 10...10 V DC, impedance: 31.5 kOhm, resolution 12 bits |
| Analogue output number  | 2  |
| Analogue output type    | Software-configurable voltage AQ1: 0...10 V DC impedance 470 Ohm, resolution 10 bits<br>Software-configurable current AQ1: 0...20 mA impedance 500 Ohm, resolution 10 bits   |
| Relay output number     | 2  |
| Output voltage          | <= power supply voltage  |
| Relay output type       | Relay outputs R1A<br>Relay outputs R1C electrical durability 100000 cycles<br>Relay outputs R2A<br>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<br>Relay output R1C on resistive load, cos phi = 1: 3 A at 30 V DC<br>Relay output R1C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC<br>Relay output R1C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC<br>Relay output R2C on resistive load, cos phi = 1: 5 A at 250 V AC<br>Relay output R2C on resistive load, cos phi = 1: 5 A at 30 V DC<br>Relay output R2C on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC<br>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<br>Relay output R2C: 5 mA at 24 V DC   |
| Physical interface                  | 2-wire RS 485  |
| Connector type                      | 1 RJ45   |
| Method of access                    | Slave Modbus RTU   |
| Transmission rate                   | 4.8 kbit/s<br>9.6 kbit/s<br>19.2 kbit/s<br>38.4 kbit/s   |
| Transmission frame                  | RTU  |
| Number of addresses                 | 1...247  |
| Data format                         | 8 bits, configurable odd, even or no parity  |
| Type of polarization                | No impedance   |
| 4 quadrant operation possible       | True   |
| Asynchronous motor control profile  | Variable torque standard<br>Optimized torque mode<br>Constant torque standard  |
| Synchronous motor control profile   | Reluctance motor<br>Permanent magnet motor   |
| Pollution degree                    | 2 conforming to EN/IEC 61800-5-1   |
| Maximum output frequency            | 0.599 kHz  |
| Acceleration and deceleration ramps | Linear adjustable separately from 0.01...9999 s<br>S, U or customized  |
| Motor slip compensation             | Automatic whatever the load<br>Adjustable<br>Not available in permanent magnet motor law<br>Can be suppressed  |
| Switching frequency                 | 2...16 kHz adjustable<br>7...16 kHz with derating factor   |
| Nominal switching frequency         | 4 kHz  |
| Braking to standstill               | By DC injection  |
| Brake chopper integrated            | True   |
| Line current                        | 37.4 A at 380 V (normal duty)<br>30.2 A at 480 V (normal duty)<br>44.9 A at 380 V (heavy duty)<br>35.7 A at 480 V (heavy duty)   |
| Line current                        | 44.9 A at 380 V without line choke (heavy duty)<br>35.7 A at 480 V without line choke (heavy duty)<br>42.4 A at 380 V with external line choke (normal duty)<br>34.1 A at 480 V with external line choke (normal duty)<br>45.5 A at 380 V with external line choke (heavy duty)<br>36.0 A at 480 V with external line choke (heavy duty)   |
| Maximum input current               | 44.9 A   |
| Maximum output voltage              | 480 V  |
| Apparent power                      | 28.3 KVA at 480 V (normal duty)<br>29.7 kVA at 480 V (heavy duty)  |
| Maximum transient current           | 42.9 A during 60 s (normal duty)<br>48 A during 60 s (heavy duty)<br>52.7 A during 2 s (normal duty)<br>58 A during 2 s (heavy duty)   |
| Electrical connection               | Screw terminal, clamping capacity: 0.2...2.5 mm <sup>2</sup> for control<br>Screw terminal, clamping capacity: 6...25 mm <sup>2</sup> for line side<br>Screw terminal, clamping capacity: 6...25 mm <sup>2</sup> for DC bus<br>Screw terminal, clamping capacity: 4...25 mm <sup>2</sup> for motor   |
| Prospective line I <sub>sc</sub>    | 22 kA  |
| Base load current at high overload  | 32.0 A   |

|  |   |
|--|---|
| Base load current at low overload                    | 39.0 A  |
| Power dissipation in W                               | Natural convection: 18 W at 380 V, switching frequency 4 kHz (heavy duty)<br>Forced convection: 346 W at 380 V, switching frequency 4 kHz (heavy duty)<br>Natural convection: 21 W at 380 V, switching frequency 4 kHz (normal duty)<br>Forced convection: 411 W at 380 V, switching frequency 4 kHz (normal duty)  |
| Electrical connection                                | Control: screw terminal 0.2...2.5 mm <sup>2</sup> /AWG 24...AWG 12<br>Line side: screw terminal 6...25 mm <sup>2</sup> /AWG 8...AWG 3<br>DC bus: screw terminal 6...25 mm <sup>2</sup> /AWG 8...AWG 3<br>Motor: screw terminal 4...25 mm <sup>2</sup> /AWG 10...AWG 3   |
| 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   |
| Protection type                                      | Thermal protection: motor<br>Safe torque off: motor<br>Motor phase loss: motor<br>Thermal protection: drive<br>Safe torque off: drive<br>Overheating: drive<br>Overcurrent: drive<br>Output overcurrent between motor phase and earth: drive<br>Output overcurrent between motor phases: drive<br>Short-circuit between motor phase and earth: drive<br>Short-circuit between motor phases: drive<br>Motor phase loss: drive<br>DC Bus overvoltage: drive<br>Line supply overvoltage: drive<br>Line supply undervoltage: drive<br>Input supply loss: drive<br>Exceeding limit speed: drive<br>Break on the control circuit: drive |
| Width  | 180.0 mm  |
| Height   | 385.0 mm  |
| Depth  | 249.0 mm  |
| Net weight   | 9.5 kg  |
| Continuous output current                            | 39 A at 4 kHz for normal duty<br>32 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<br>CSA<br>TÜV<br>EAC<br>CTick  |
| Marking                | CE  |
| Standards              | EN/IEC 61800-3<br>EN/IEC 61800-5-1<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1<br>UL 618000-5-1<br>UL 508C |
| Assembly style         | With heat sink  |

|  |  |
|--|--|
| Electromagnetic compatibility                                    | Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3<br>Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4<br>1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5<br>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<br>Class 3S3 according to IEC 60721-3-3   |
| Maximum acceleration under shock impact (during operation)       | 70 m/s <sup>2</sup> at 22 ms   |
| Maximum acceleration under vibrational stress (during operation) | 5 m/s <sup>2</sup> at 9...200 Hz   |
| Maximum deflection under vibratory load (during operation)       | 1.5 mm at 2...9 Hz   |
| Permitted relative humidity (during operation)                   | Class 3K5 according to EN 60721-3  |
| Volume of cooling air  | 128.0 m <sup>3</sup> /h  |
| Type of cooling  | Forced convection  |
| Overvoltage category   | Class III  |
| Regulation loop  | Adjustable PID regulator   |
| Noise level  | 55.6 dB  |
| Pollution degree   | 2  |
| Ambient air transport temperature                                | -40...70 °C  |
| Ambient air temperature for operation                            | -15...50 °C without derating (vertical position)<br>50...60 °C with derating factor (vertical position)  |
| Ambient air temperature for storage                              | -40...70 °C  |
| Isolation  | Between power and control terminals  |

## Packing Units

|                              |          |
|------------------------------|----------|
| Unit Type of Package 1       | PCE      |
| Number of Units in Package 1 | 1        |
| Package 1 Weight             | 11.14 kg |
| Package 1 Height             | 34.0 cm  |
| Package 1 width              | 30.5 cm  |
| Package 1 Length             | 56.0 cm  |
| Unit Type of Package 2       | P06      |
| Number of Units in Package 2 | 2        |
| Package 2 Weight             | 35.28 kg |
| Package 2 Height             | 73.5 cm  |
| Package 2 width              | 60.0 cm  |
| Package 2 Length             | 80.0 cm  |
| Package 3 Height             | 80 cm    |

## Offer Sustainability

|                            |   |
|----------------------------|---|
| Sustainable offer status   | Green Premium product   |
| REACH Regulation           | <a href="#">REACH Declaration</a>   |
| EU RoHS Directive          | Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>                              |
| Mercury free               | Yes   |
| RoHS exemption information | <a href="#">Yes</a>   |
| China RoHS Regulation      | <a href="#">China RoHS Declaration</a>  |
| Environmental Disclosure   | <a href="#">Product Environmental Profile</a>   |
| Circularity Profile        | <a href="#">End Of Life Information</a>   |
| WEEE                       | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |
| Upgradeability             | <a href="#">Upgraded Components Available</a>   |

## Contractual warranty

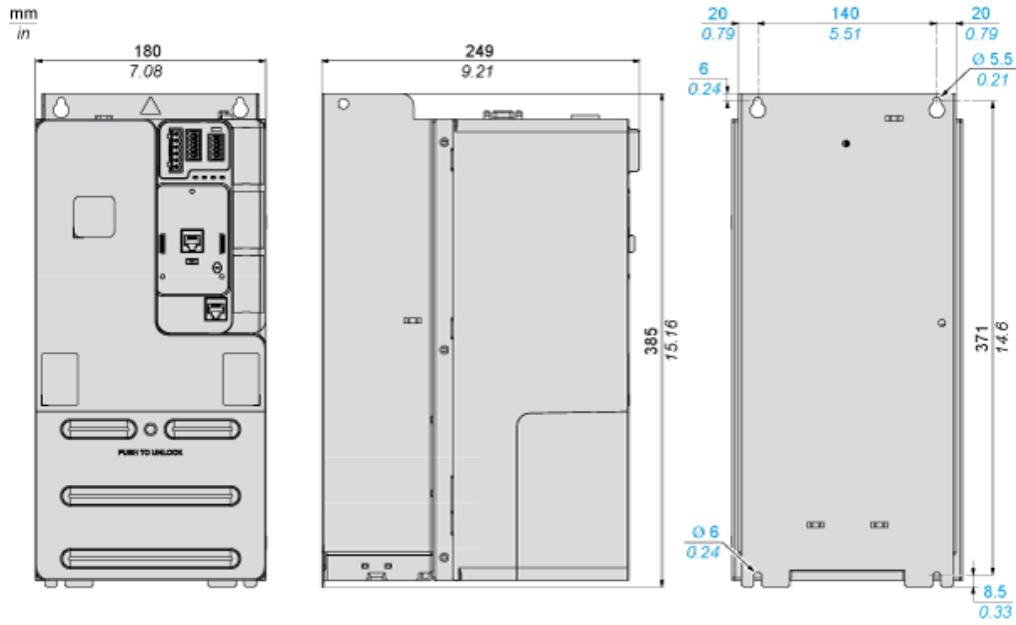
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|          |           |
|----------|-----------|
| Warranty | 18 months |
|----------|-----------|

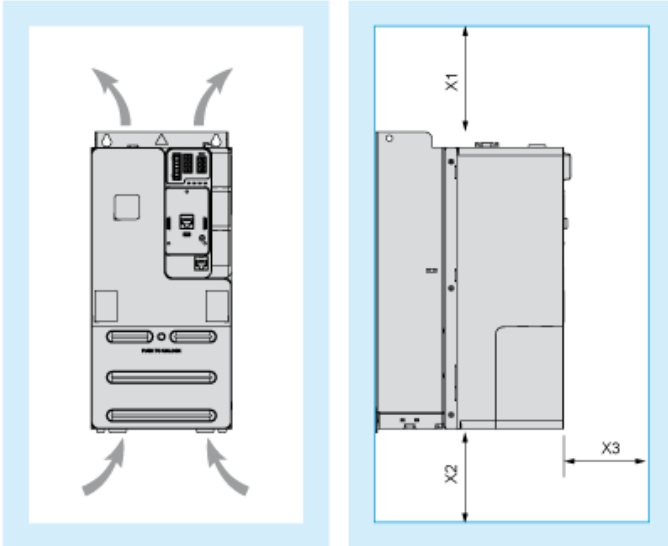
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## Dimensions

Views: Front - Left - Rear



Clearance



Dimensions in mm

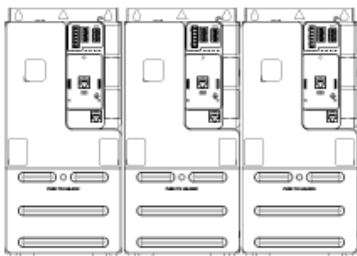
| X1    | X2    | X3   |
|-------|-------|------|
| ≥ 100 | ≥ 100 | ≥ 60 |

Dimensions in in.

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

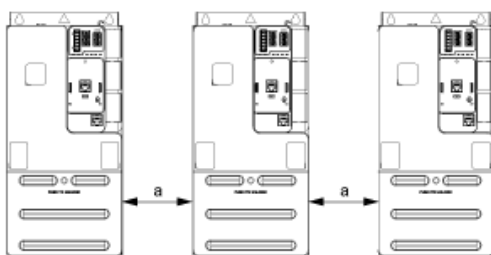
Mounting Types

Mounting Type A: Side by Side IP20



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

Mounting Type B: Individual IP20

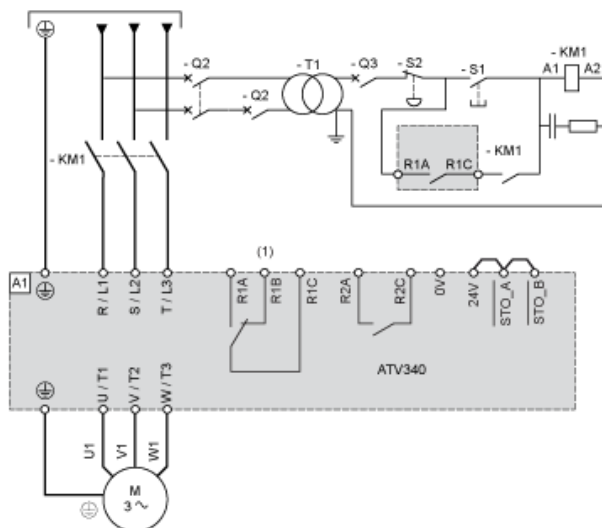


a ≥ 50 mm (1.97 in.) from 50...60°C, no restriction below 50°C

## 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

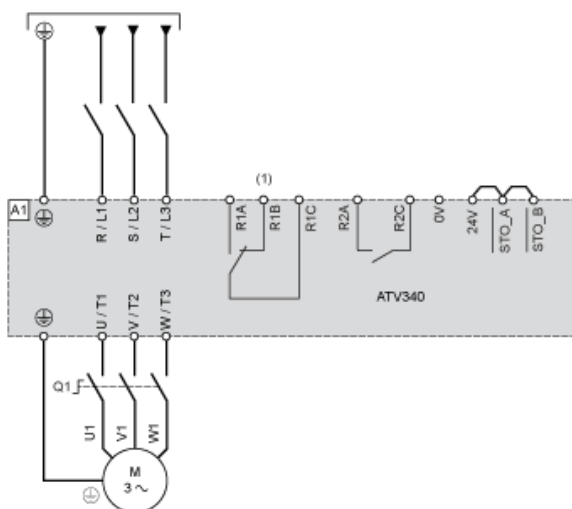
S1 :

S1 : Pushbutton

S2 : Emergency stop

T1 : Transformer for control part

### Three-phase Power Supply With Downstream Breaking via Switch Disconnecter



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

A1 : Drive

Q1 : Switch disconnecter

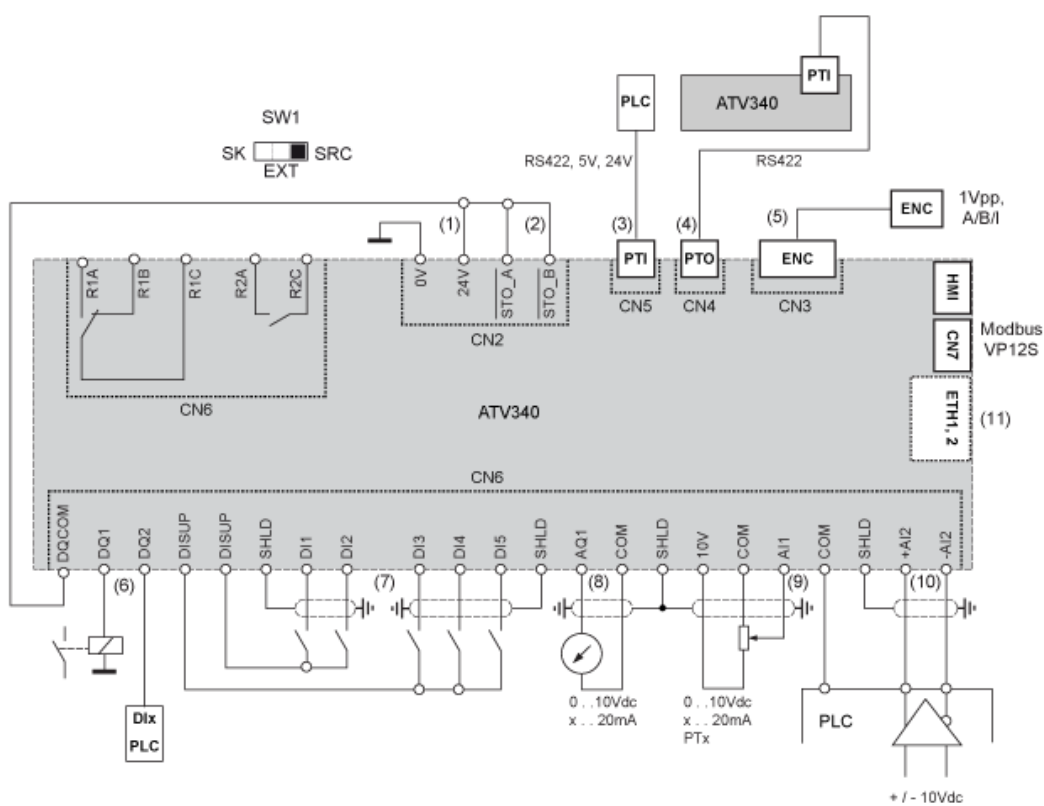


## Sensor Connection



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

## Control Block Wiring Diagram

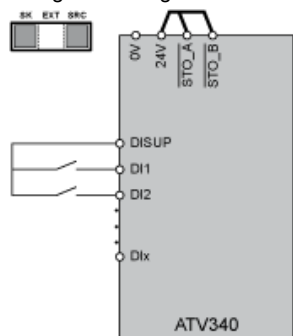


- (1) 24V supply (STO)
- (2) STO - Safe Torque Off
- (3) PTI - Pulse Train In
- (4) PTO - Pulse Train Out
- (5) Motor Encoder connection
- (6) Digital outputs
- (7) Digital inputs
- (8) Analog output
- (9) Analog input
- (10) Differential Analog Input
- (11) Ethernet port (only on Ethernet drive version)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

## Digital Inputs Wiring

## Digital Inputs: Internal Supply

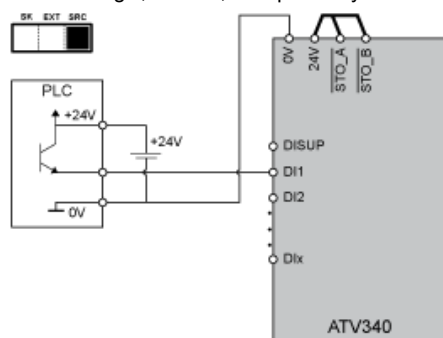
Using DISUP Signal



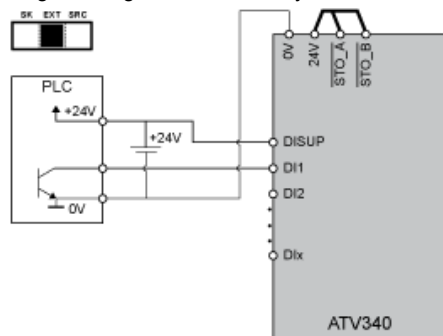
In SRC position DISUP outputs 24 V. In SK position DISUP is connected to 0 V.

## Digital Inputs: External Supply

Positive Logic, Source, European Style

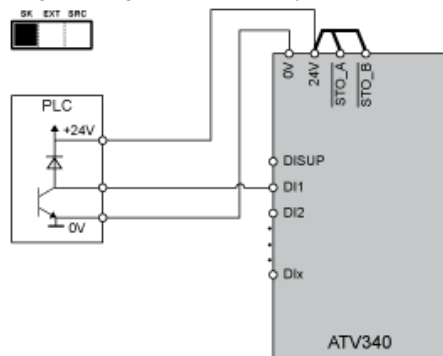


Negative Logic, Sink, Asian Style



## Digital Inputs: Internal supply

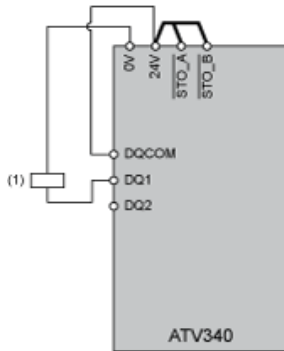
Negative Logic, Sink, Asian Style



## 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