Product datasheet

Specifications



variable speed drive - 37kW- 400V - 3 phases - ATV340 Ethernet

Local distributor code: 408900663 ATV340D37N4E

Main

Range of product	Altivar Machine ATV340
Product or component type	Variable speed drive
Product specific application	Machine
Variant	Standard version
Mounting mode	Wall mount
Communication port protocol	Modbus TCP Modbus serial EtherNet/IP
Option card	Communication module, PROFINET Communication module, DeviceNet Communication module, CANopen 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	74.5 A
Motor power kW	45 kW for normal duty 37 kW for heavy duty
Motor power hp	60 hp for normal duty 50 hp for heavy duty
EMC filter	Class C3 EMC filter integrated
IP degree of protection	IP20
Degree of protection	UL type 1

Complementary

Discrete input number	8
Discrete input type	PTI safe torque off: 0…30 kHz, 24 V DC (30 V) DI1...DI5 programmable as pulse input, 24 V DC (30 V), impedance: 3.5 kOhm programmable
Number of preset speeds	16 preset speeds
Discrete output number	1.0
Discrete output type	Programmable output DQ1, DQ2 30 V DC 100 mA
Analogue input number	3
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

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

	AI1 software-configurable voltage: 0...10 V DC, impedance: 31.5 kOhm, resolution 12 bits 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, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AQ1, AQ2: 0...20 mA impedance 500 Ohm, resolution 10 bits
Relay output number	3
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
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	Optimized torque mode Variable torque standard Constant torque standard
Synchronous motor control profile	Reluctance motor 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 S, U or customized
Motor slip compensation	Adjustable Can be suppressed Automatic whatever the load Not available in permanent magnet motor law
Switching frequency	2...16 kHz adjustable 4...16 kHz with derating factor
Nominal switching frequency	4 kHz
Braking to standstill	By DC injection
Brake chopper integrated	True
Line current	79.8 A at 380 V (normal duty) 69.1 A at 480 V (normal duty) 67.1 A at 380 V (heavy duty) 59.0 A at 480 V (heavy duty)
Line current	79.8 A at 380 V with internal line choke (normal duty) 69.1 A at 480 V with internal line choke (normal duty) 67.1 A at 380 V with internal line choke (heavy duty) 59 A at 480 V with internal line choke (heavy duty) 67.1 A

	59.0 A
Maximum input current	79.8 A
Maximum output voltage	480 V
Apparent power	57.4 kVA at 480 V (normal duty) 49.1 kVA at 480 V (heavy duty)
Maximum transient current	105.6 A during 60 s (normal duty) 105.6 A during 2 s (normal duty) 111.8 A during 60 s (heavy duty) 111.8 A during 2 s (heavy duty)
Electrical connection	Screw terminal, clamping capacity: 0.75...1.5 mm² for control Screw terminal, clamping capacity: 35...50 mm² for line side Screw terminal, clamping capacity: 35...50 mm² for DC bus Screw terminal, clamping capacity: 50 mm² for motor
Prospective line Isc	50 kA
Base load current at high overload	74.5 A
Base load current at low overload	88.0 A
Power dissipation in W	Natural convection: 90 W at 380 V, switching frequency 4 kHz (heavy duty) Forced convection: 796 W at 380 V, switching frequency 4 kHz (heavy duty) Natural convection: 105 W at 380 V, switching frequency 4 kHz (normal duty) Forced convection: 943 W at 380 V, switching frequency 4 kHz (normal duty)
Electrical connection	Control: screw terminal 0.75...1.5 mm²/AWG 18...AWG 16 Line side: screw terminal 35...50 mm²/AWG 2...AWG 1 DC bus: screw terminal 35...50 mm²/AWG 3...AWG 1 Motor: screw terminal 50 mm²/AWG 1
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 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 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

Width	213.0 mm
Height	660.0 mm
Depth	262.0 mm
Net weight	28.4 kg
Continuous output current	88 A at 4 kHz for normal duty 74.5 A at 4 kHz for heavy duty

Environment

Operating altitude	<= 4800 m with current derating above 1000m
Operating position	Vertical +/- 10 degree
Product certifications	UL CSA TÜV EAC CTick
Marking	CE
Standards	EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 60721-3 IEC 61508 IEC 13849-1 UL 618000-5-1 UL 508C IEC 61000-3-12
Maximum THDI	<48 % full load conforming to IEC 61000-3-12 <48 % 80 % load conforming to IEC 61000-3-12
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)	150 m/s² at 11 ms
Maximum acceleration under vibrational stress (during operation)	10 m/s² at 13...200 Hz
Maximum deflection under vibratory load (during operation)	1.5 mm at 2...13 Hz
Permitted relative humidity (during operation)	Class 3K5 according to EN 60721-3
Volume of cooling air	240.0 m3/h
Type of cooling	Forced convection
Overvoltage category	Class III
Regulation loop	Adjustable PID regulator
Noise level	63.5 dB
Pollution degree	2
Ambient air transport temperature	-40…70 °C
Ambient air temperature for operation	-15…50 °C without derating (vertical position) 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	37.6 kg
Package 1 Height	54 cm
Package 1 width	34 cm
Package 1 Length	84 cm
Unit Type of Package 2	BB1
Number of Units in Package 2	1
Package 2 Weight	38.5 kg
Package 2 Height	53.4 cm
Package 2 width	33.2 cm
Package 2 Length	83.2 cm
Unit Type of Package 3	PAL
Number of Units in Package 3	1
Package 3 Weight	37.6 kg
Package 3 Height	54 cm
Package 3 width	34 cm
Package 3 Length	84 cm

Offer Sustainability

Sustainable offer status	Green Premium product
REACh Regulation	REACh Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
Upgradeability	Upgraded components available

Contractual warranty

Warranty	18 months

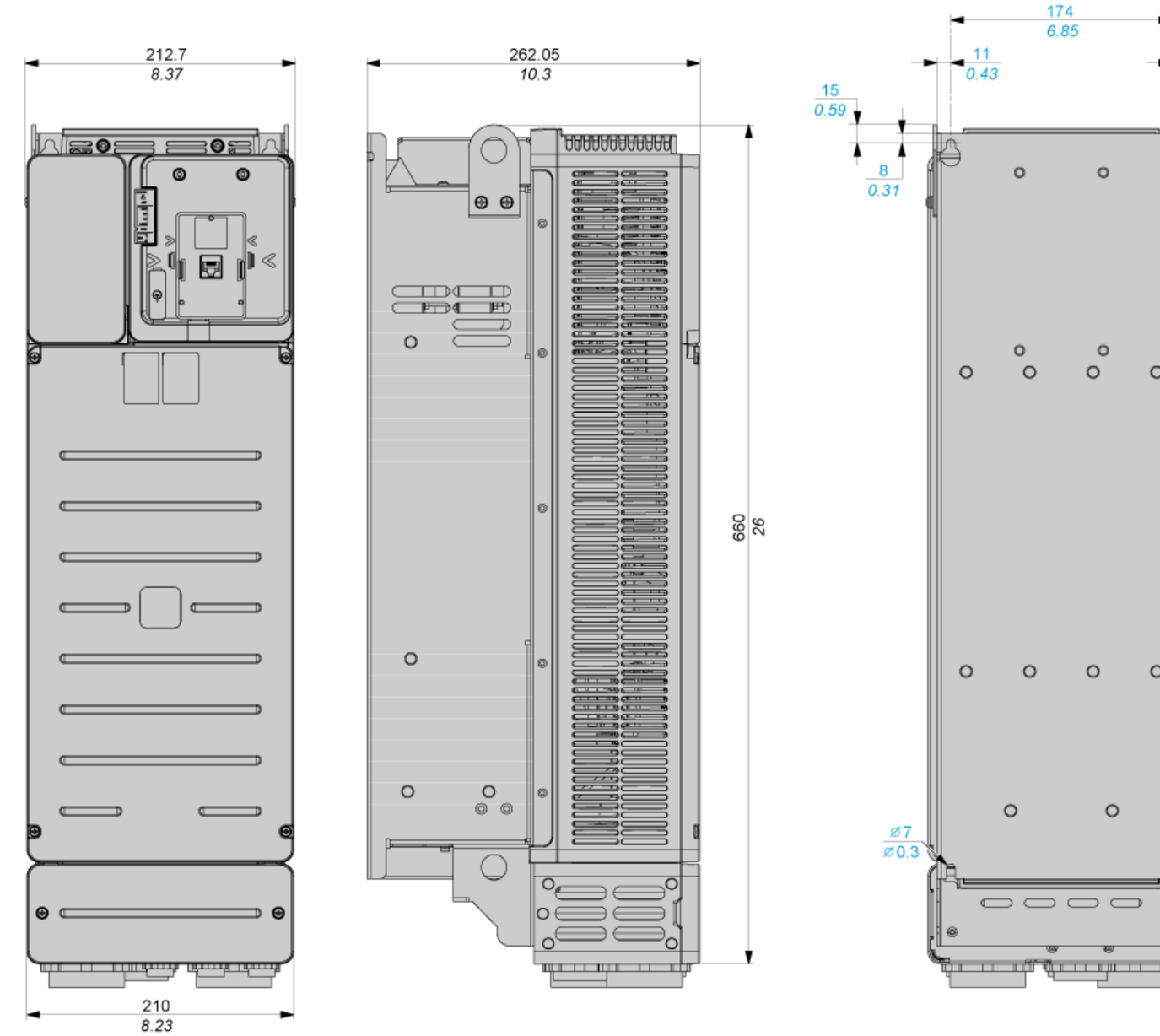
Product datasheet ATV340D37N4E

Dimensions Drawings

Dimensions

Views: Front - Left - Rear

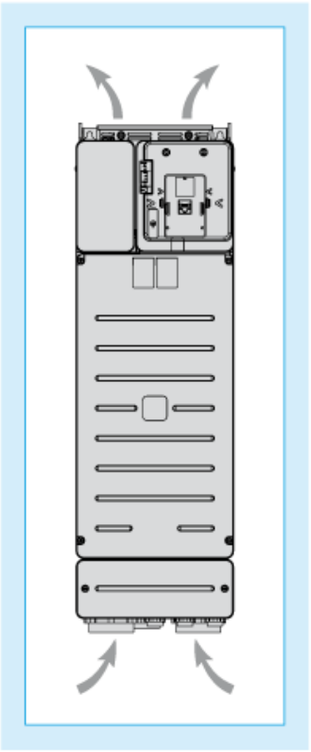
mm
in

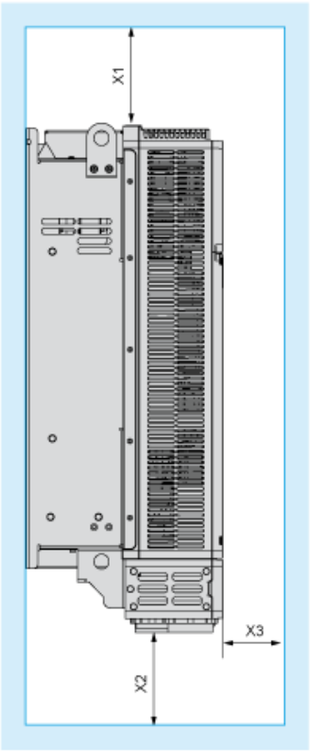


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Mounting and Clearance

Clearance





Dimensions in mm

X1	X2	X3
≥ 100	≥ 100	≥ 10

Dimensions in in.

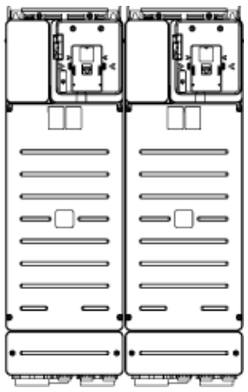
X1	X2	X3
≥ 3.94	≥ 3.94	≥ 0.39

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Mounting and Clearance

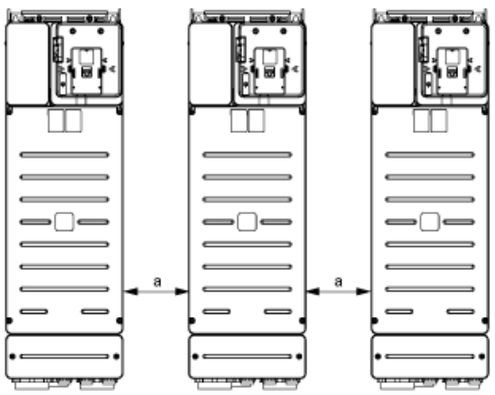
Mounting Types

Mounting Type A: Side by Side IP20



Possible, up to 50 °C, 2 drives only

Mounting Type B: Individual IP20

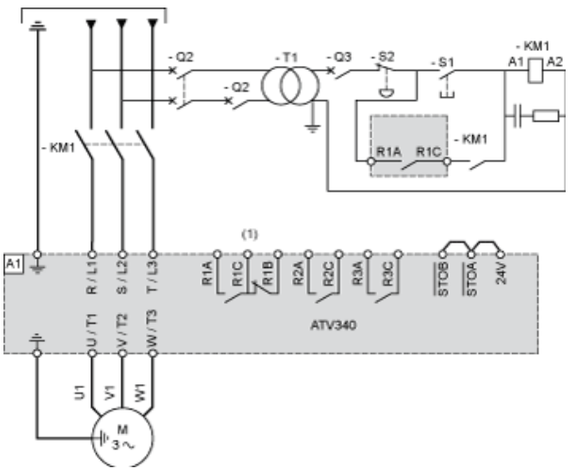


a ≥ 110 mm (4.33 in.)

Connections and Schema

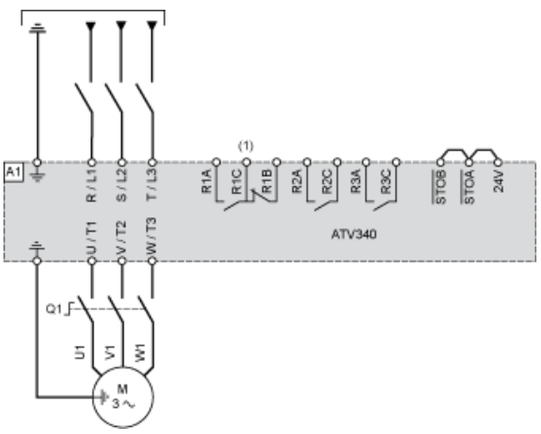
Three-Phase Power Supply with Upstream Breaking via Line Contactor Without Safety Function STO

Connection diagrams conforming to standards ISO13849 category 1 and IEC/EN 61508 capacitySIL1, stopping category 0 in accordance with standard IEC/EN 60204-1.



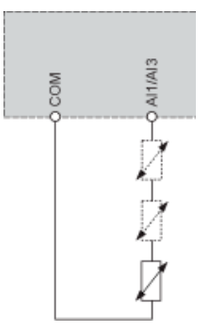
(1) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.
A1 : Drive
KM1 : Line Contactor
Q2, Q3 : Circuit breakers
S1 : Pushbutton
S2 : Emergency stop
T1 : Transformer for control part

Three-Phase Power Supply with Downstream Breaking via Switch Disconnector



(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

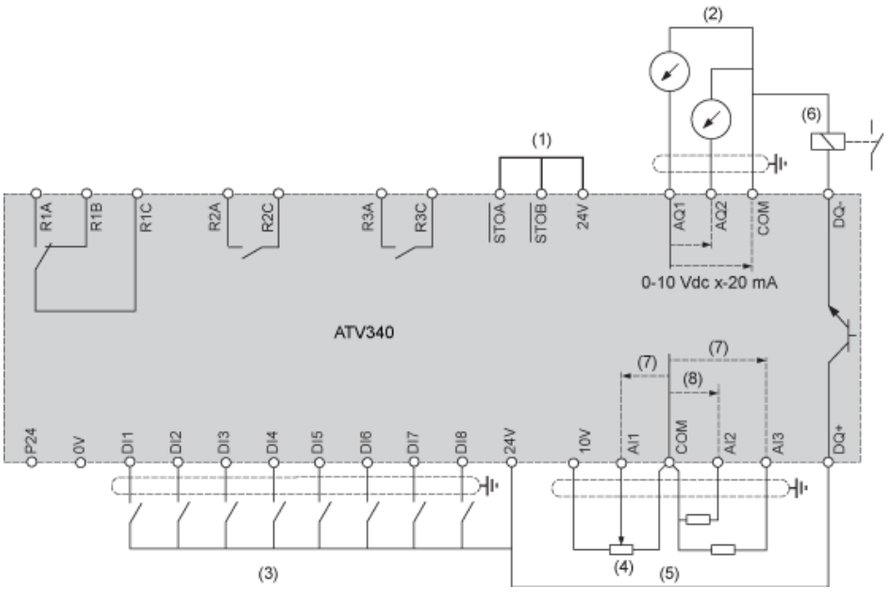


It is possible to connect either 1 or 3 sensors on terminals AI1/AI3.

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Connections and Schema

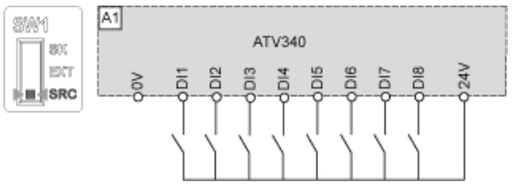
Control Block Wiring Diagram



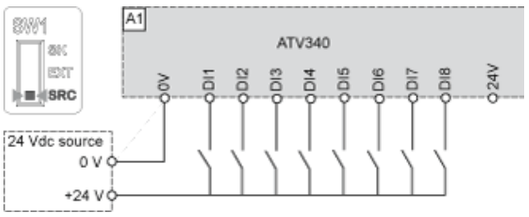
(1) Safe Torque Off
(2) Analog Output
(3) Digital Input
(4) Reference potentiometer
(5) Analog Input
(6) Digital Output
(7) 0-10 Vdc, x-20 mA
(8) 0-10 Vdc, -10 Vdc...+10 Vdc
A1 : ATV340 Drive
R1A, R1B, R1C Fault relay
R2A, R2C Sequence relay
R3A, R3C Sequence relay

Digital Inputs Wiring

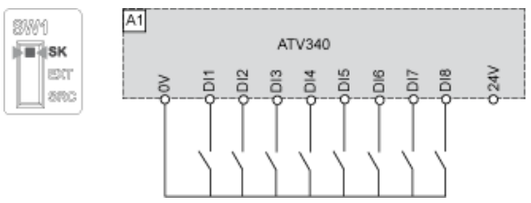
Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



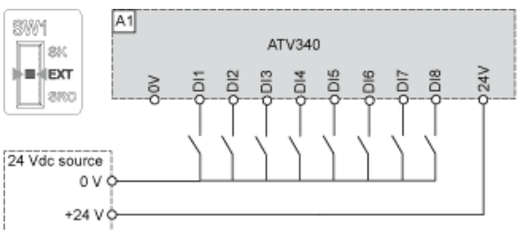
Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



Switch Set to SK (Sink) Position Using the Output Power Supply for the Digital Inputs



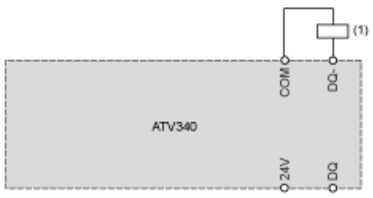
Switch Set to EXT Position Using an External Power Supply for the DIs



Digital Outputs Wiring

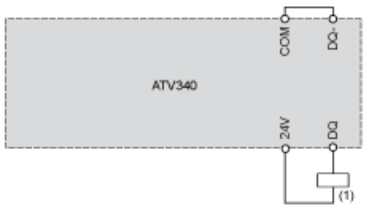
Digital Outputs: Internal Supply

Positive Logic, Source, European Style, DQ switches to +24V



(1) Relay or valve

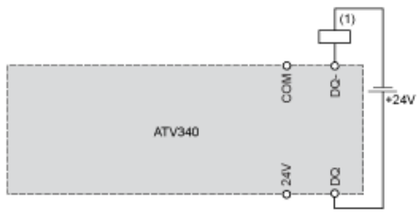
Negative Logic, Sink, Asian Style, DQ switches to 0V



(1) Relay or valve

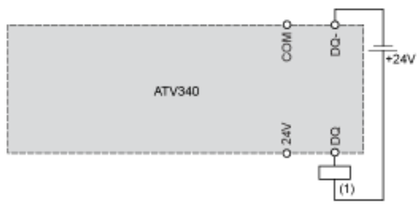
Digital Outputs: External Supply

Positive Logic, Source, European Style, DQ switches to +24V



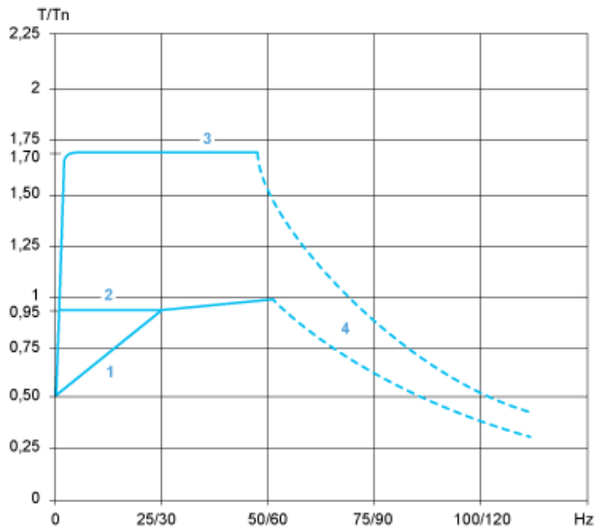
(1) Relay or valve

Negative Logic, Sink, Asian Style, DQ switches to 0V



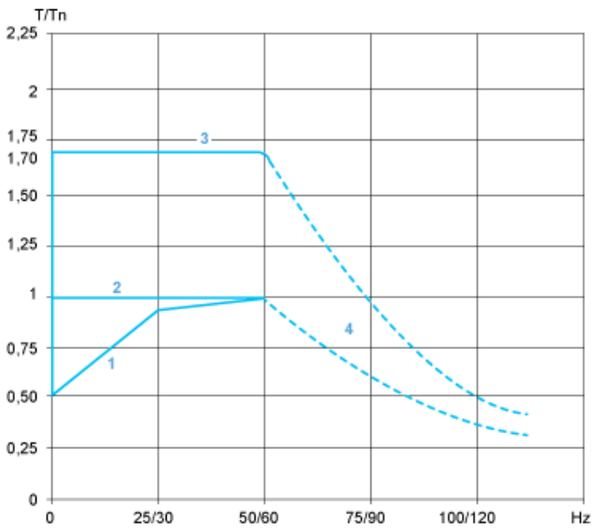
(1) Relay or valve

Open Loop Applications



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