

Technical data

Mains connection	
Voltage and power range	1-phase, 200 to 240 V, +10%/-15% 0.25 to 2.2 kW 3-phase, 380 to 480 V, +10%/-15% 0.25 to 22 kW
Frequency	50/60 Hz ± 5%
Common DC connection	
DC voltage level	-1 types 270 to 324 V ±10% -4 types 513 to 648 V ±10%
Charging circuit	Internal charging circuit
Motor connection	
Voltage	0 to U_N , 3-phase
Frequency	0 to 599 Hz
Motor control	Scalar control Vector control
Switching frequency	1 to 12 kHz, default 4 kHz
Dynamic braking	Flux braking (moderate or full) Resistor braking (optional)
Motor control performance	
Speed control performance, open loop	
Static accuracy	20% of motor rated slip
Dynamic accuracy	1% seconds with 100% torque step
Speed control performance, closed loop	
Static accuracy	0.1% of motor rated speed
Dynamic accuracy	<1% seconds with 100% torque step
Torque control performance	
Torque step rise time	< 10 ms, rated torque step
Non-linearity	±5% with rated torque
Braking power connection	
Brake chopper	Built-in brake chopper as standard
Brake resistor	External resistor connected to drive
Functional safety	
Built-in safety features	Safe torque off (STO) EN/IEC61800-5-2: IEC61508 ed2: SIL 3, IEC 61511: SIL 3, IEC 62061: SIL CL 3, EN ISO 13849-1: PL e/cat. 3

Environmental limits	
Ambient temperature	
Transportation and storage	-40 to +70 °C (-40 to +158 °F)
Operation	-10 to +50 °C (14 to 122 °F), with derating up to 60 °C (except R0, which has max. temperature of 50 °C)
Cooling method	Air-cooled, dry clean air
Altitude	0 to 4000 m, (0 to 13000 ft) for 400 V units (see allowed power systems in HW manual) 0 to 2000 m, (0 to 6600 ft) for 200 V units derating above 1000 m (3300 ft)
Relative humidity	5 to 95%, no condensation allowed
Degree of protection	IP20 as standard Optional UL type 1 Kit
Contamination levels	No conductive dust allowed
Storage	IEC 60721-3-1, Class 1C2 (chemical gases) Class 1S2 (solid particles)
Transportation	IEC 60721-3-2, Class 2C2 (chemical gases) Class 2S2 (solid particles)
Operation	IEC 60721-3-3, Class 3C2 (chemical gases) Class 3S2 (solid particles)
Product compliance	
CE	
Low Voltage Directive 2014/35/EU 2, EN 61800-5-1: 2007	
Machinery Directive 2006/42/EC, EN 61800-5-2: 2007	
EMC Directive 2014/30/EU, EN 61800-3: 2004 + A1: 2012	
UL, cUL certification – file E211945	
TUV Certification for functional safety	
Quality assurance system ISO 9001	
Environmental system ISO 14001	
Waste electrical and electronic equipment directive (WEEE) 2002/96/EC	
RoHS directive 2011/65/EU	
EAC, KC, RCM	

How to select a drive

How you build up your ordering code

Start by identifying your supply voltage
This indicates what rating table to use;
see page 12.

Select the ordering code for the ACS380 machinery drive by choosing either the standard or the configured variant (page 11). Then choose the desired EMC level on page 11. If the configured variant is selected, choose the desired fieldbus protocol (page 17) by selecting the correct option code and add the option codes to the drive's ordering code.

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Ordering information

The type designation indicates the specifications and configuration of the drive.
The table shows the primary drive variants.
Sample type code 1: ACS380-04XX-00M-4 (Standard variant, not possible to add options as pluscode)
Sample type code 2: ACS380-04XX-02A6-4 (Configured variant, possible to add options as pluscode)

Segment	A	B	C	D	E	F
ACS380	XX	XX	XX	XX	XX	XXXX

Product series
Type and construction
Rating
Voltage
Option code

Basic codes

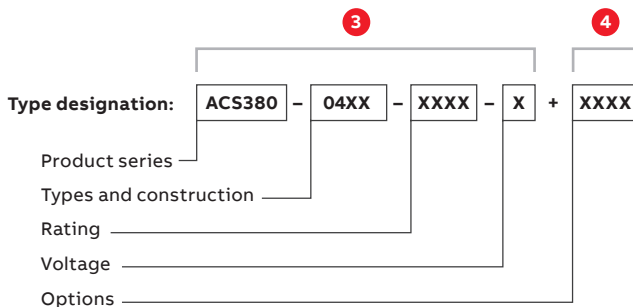
Segment	Option	Description
A	00M	Standard variant
A	02A6	Configured variant
B	00	0 V DC (3-phase 400 V or 0 V DC 3-phase 200 V)
B	04	400 V AC (3-phase 400 V)
B	06	690 V AC (3-phase 690 V)
C	00	Standard variant (0 V and Modbus)
C	01	Configured variant
D	00	For example, 00M refers to a nominal output current of 0.4 A
D	01	For example, 01A6 refers to a nominal output current of 1.6 A

Option codes for configured variant (ACS380-02A6-4) and plus codes for basic code

Segment	Option	Description
F	0000	Standard
F	0001	Modbus
F	0002	Profibus
F	0003	DeviceNet
F	0004	EtherCAT
F	0005	EtherNet/IP
F	0006	PROFINET
F	0007	Modbus Plus
F	0008	Modbus TCP
F	0009	Modbus RTU
F	0010	Modbus ASCII
F	0011	Modbus Binary
F	0012	Modbus Hex
F	0013	Modbus Dec
F	0014	Modbus Oct
F	0015	Modbus HexDec
F	0016	Modbus ASCIIHex
F	0017	Modbus ASCIIHexDec
F	0018	Modbus ASCIIHexOct
F	0019	Modbus ASCIIHexDecOct
F	0020	Modbus ASCIIHexOctDec
F	0021	Modbus ASCIIHexDecOct
F	0022	Modbus ASCIIHexOctDec
F	0023	Modbus ASCIIHexDecOct
F	0024	Modbus ASCIIHexOctDec
F	0025	Modbus ASCIIHexDecOct
F	0026	Modbus ASCIIHexOctDec
F	0027	Modbus ASCIIHexDecOct
F	0028	Modbus ASCIIHexOctDec
F	0029	Modbus ASCIIHexDecOct
F	0030	Modbus ASCIIHexOctDec
F	0031	Modbus ASCIIHexDecOct
F	0032	Modbus ASCIIHexOctDec
F	0033	Modbus ASCIIHexDecOct
F	0034	Modbus ASCIIHexOctDec
F	0035	Modbus ASCIIHexDecOct
F	0036	Modbus ASCIIHexOctDec
F	0037	Modbus ASCIIHexDecOct
F	0038	Modbus ASCIIHexOctDec
F	0039	Modbus ASCIIHexDecOct
F	0040	Modbus ASCIIHexOctDec
F	0041	Modbus ASCIIHexDecOct
F	0042	Modbus ASCIIHexOctDec
F	0043	Modbus ASCIIHexDecOct
F	0044	Modbus ASCIIHexOctDec
F	0045	Modbus ASCIIHexDecOct
F	0046	Modbus ASCIIHexOctDec
F	0047	Modbus ASCIIHexDecOct
F	0048	Modbus ASCIIHexOctDec
F	0049	Modbus ASCIIHexDecOct
F	0050	Modbus ASCIIHexOctDec
F	0051	Modbus ASCIIHexDecOct
F	0052	Modbus ASCIIHexOctDec
F	0053	Modbus ASCIIHexDecOct
F	0054	Modbus ASCIIHexOctDec
F	0055	Modbus ASCIIHexDecOct
F	0056	Modbus ASCIIHexOctDec
F	0057	Modbus ASCIIHexDecOct
F	0058	Modbus ASCIIHexOctDec
F	0059	Modbus ASCIIHexDecOct
F	0060	Modbus ASCIIHexOctDec
F	0061	Modbus ASCIIHexDecOct
F	0062	Modbus ASCIIHexOctDec
F	0063	Modbus ASCIIHexDecOct
F	0064	Modbus ASCIIHexOctDec
F	0065	Modbus ASCIIHexDecOct
F	0066	Modbus ASCIIHexOctDec
F	0067	Modbus ASCIIHexDecOct
F	0068	Modbus ASCIIHexOctDec
F	0069	Modbus ASCIIHexDecOct
F	0070	Modbus ASCIIHexOctDec
F	0071	Modbus ASCIIHexDecOct
F	0072	Modbus ASCIIHexOctDec
F	0073	Modbus ASCIIHexDecOct
F	0074	Modbus ASCIIHexOctDec
F	0075	Modbus ASCIIHexDecOct
F	0076	Modbus ASCIIHexOctDec
F	0077	Modbus ASCIIHexDecOct
F	0078	Modbus ASCIIHexOctDec
F	0079	Modbus ASCIIHexDecOct
F	0080	Modbus ASCIIHexOctDec
F	0081	Modbus ASCIIHexDecOct
F	0082	Modbus ASCIIHexOctDec
F	0083	Modbus ASCIIHexDecOct
F	0084	Modbus ASCIIHexOctDec
F	0085	Modbus ASCIIHexDecOct
F	0086	Modbus ASCIIHexOctDec
F	0087	Modbus ASCIIHexDecOct
F	0088	Modbus ASCIIHexOctDec
F	0089	Modbus ASCIIHexDecOct
F	0090	Modbus ASCIIHexOctDec
F	0091	Modbus ASCIIHexDecOct
F	0092	Modbus ASCIIHexOctDec
F	0093	Modbus ASCIIHexDecOct
F	0094	Modbus ASCIIHexOctDec
F	0095	Modbus ASCIIHexDecOct
F	0096	Modbus ASCIIHexOctDec
F	0097	Modbus ASCIIHexDecOct
F	0098	Modbus ASCIIHexOctDec
F	0099	Modbus ASCIIHexDecOct

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Choose other options (on page 22) and add the option codes to the drive's order code. Remember to use a "+" mark before each option code.



Choose the motor power and current rating from the ratings table on page 12.

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Ratings, types and voltages

Table 1: 200 V supply (200 to 240 V). The power ratings are valid at nominal voltage 200 V (0.85 to 1.05 kW).

Power type	Power class	Rated voltage	Light-duty use	Heavy-duty use
	L (A)	P _n (kW)	L (A)	P _n (kW)
ACS380-04xx-00M-1	80	2.4	0.37	2.3
ACS380-04xx-00M-2	80	2.4	0.55	3.5
ACS380-04xx-00M-3	81	4.0	0.75	4.0
ACS380-04xx-00M-4	81	4.0	1.1	4.0
ACS380-04xx-01M-1	81	7.5	1.5	7.5
ACS380-04xx-01M-2	82	15.0	2.2	15.0

Table 2: 400 V supply (380 to 480 V). The power ratings are valid at nominal voltage 400 V (0.85 to 1.05 kW).

Power type	Power class	Rated voltage	Light-duty use	Heavy-duty use
	L (A)	P _n (kW)	L (A)	P _n (kW)
ACS380-04xx-04M-1	80	4.0	0.37	2.3
ACS380-04xx-04M-2	80	4.0	0.55	3.5
ACS380-04xx-04M-3	81	7.5	0.75	4.0
ACS380-04xx-04M-4	81	7.5	1.1	4.0
ACS380-04xx-06M-1	81	15.0	1.5	7.5
ACS380-04xx-06M-2	82	30.0	2.2	15.0
ACS380-04xx-08M-1	81	30.0	3.0	30.0
ACS380-04xx-08M-2	82	60.0	4.0	60.0
ACS380-04xx-10M-1	80	17.0	3.5	16.0
ACS380-04xx-10M-2	82	34.0	4.5	34.0
ACS380-04xx-15M-1	84	22.0	5.5	20.0
ACS380-04xx-15M-2	84	44.0	7.5	44.0
ACS380-04xx-20M-1	84	30.0	8.5	30.0
ACS380-04xx-20M-2	84	60.0	11.0	60.0

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I/O option modules

ACS380 drives can be ordered with different I/O configurations. The standard input and output of the drive can be extended by using I/O option modules. A BMD-01 module extends the configured variant's I/O, whereas a BMD-02 module provides both additional I/O and Modbus. In case additional relay outputs are needed, they can be added with a BREL-01 module. A BAP-01 module introduces an external 24 V DC supply to the drive's control circuit.

The ACS380 drive's open loop performance is sufficient for almost any application, when accurate control is needed close to zero speed. However, if speed feedback is needed for even more accurate control or for active load like hoists, a speed feedback module STAC-02 adds support for TTL and TTL pulse encoder.

I/O option modules	Description	Module
BMD-01	External relay option, 4 A 240 V AC (200 V)	BMD-01
BMD-02	External 24 V DC (200 V)	BMD-02
BMD-03	External 24 V DC (200 V)	BMD-03
BMD-04	External 24 V DC (200 V)	BMD-04
BMD-05	External 24 V DC (200 V)	BMD-05
BMD-06	External 24 V DC (200 V)	BMD-06
BMD-07	External 24 V DC (200 V)	BMD-07
BMD-08	External 24 V DC (200 V)	BMD-08
BMD-09	External 24 V DC (200 V)	BMD-09
BMD-10	External 24 V DC (200 V)	BMD-10
BMD-11	External 24 V DC (200 V)	BMD-11
BMD-12	External 24 V DC (200 V)	BMD-12
BMD-13	External 24 V DC (200 V)	BMD-13
BMD-14	External 24 V DC (200 V)	BMD-14
BMD-15	External 24 V DC (200 V)	BMD-15
BMD-16	External 24 V DC (200 V)	BMD-16
BMD-17	External 24 V DC (200 V)	BMD-17
BMD-18	External 24 V DC (200 V)	BMD-18
BMD-19	External 24 V DC (200 V)	BMD-19
BMD-20	External 24 V DC (200 V)	BMD-20
BMD-21	External 24 V DC (200 V)	BMD-21
BMD-22	External 24 V DC (200 V)	BMD-22
BMD-23	External 24 V DC (200 V)	BMD-23
BMD-24	External 24 V DC (200 V)	BMD-24
BMD-25	External 24 V DC (200 V)	BMD-25
BMD-26	External 24 V DC (200 V)	BMD-26
BMD-27	External 24 V DC (200 V)	BMD-27
BMD-28	External 24 V DC (200 V)	BMD-28
BMD-29	External 24 V DC (200 V)	BMD-29
BMD-30	External 24 V DC (200 V)	BMD-30
BMD-31	External 24 V DC (200 V)	BMD-31
BMD-32	External 24 V DC (200 V)	BMD-32
BMD-33	External 24 V DC (200 V)	BMD-33
BMD-34	External 24 V DC (200 V)	BMD-34
BMD-35	External 24 V DC (200 V)	BMD-35
BMD-36	External 24 V DC (200 V)	BMD-36
BMD-37	External 24 V DC (200 V)	BMD-37
BMD-38	External 24 V DC (200 V)	BMD-38
BMD-39	External 24 V DC (200 V)	BMD-39
BMD-40	External 24 V DC (200 V)	BMD-40
BMD-41	External 24 V DC (200 V)	BMD-41
BMD-42	External 24 V DC (200 V)	BMD-42
BMD-43	External 24 V DC (200 V)	BMD-43
BMD-44	External 24 V DC (200 V)	BMD-44
BMD-45	External 24 V DC (200 V)	BMD-45
BMD-46	External 24 V DC (200 V)	BMD-46
BMD-47	External 24 V DC (200 V)	BMD-47
BMD-48	External 24 V DC (200 V)	BMD-48
BMD-49	External 24 V DC (200 V)	BMD-49
BMD-50	External 24 V DC (200 V)	BMD-50
BMD-51	External 24 V DC (200 V)	BMD-51
BMD-52	External 24 V DC (200 V)	BMD-52
BMD-53	External 24 V DC (200 V)	BMD-53
BMD-54	External 24 V DC (200 V)	BMD-54
BMD-55	External 24 V DC (200 V)	BMD-55
BMD-56	External 24 V DC (200 V)	BMD-56
BMD-57	External 24 V DC (200 V)	BMD-57
BMD-58	External 24 V DC (200 V)	BMD-58
BMD-59	External 24 V DC (200 V)	BMD-59
BMD-60	External 24 V DC (200 V)	BMD-60
BMD-61	External 24 V DC (200 V)	BMD-61
BMD-62	External 24 V DC (200 V)	BMD-62
BMD-63	External 24 V DC (200 V)	BMD-63
BMD-64	External 24 V DC (200 V)	BMD-64
BMD-65	External 24 V DC (200 V)	BMD-65
BMD-66	External 24 V DC (200 V)	BMD-66
BMD-67	External 24 V DC (200 V)	BMD-67
BMD-68	External 24 V DC (200 V)	BMD-68
BMD-69	External 24 V DC (200 V)	BMD-69
BMD-70	External 24 V DC (200 V)	BMD-70
BMD-71	External 24 V DC (200 V)	BMD-71
BMD-72	External 24 V DC (200 V)	BMD-72
BMD-73	External 24 V DC (200 V)	BMD-73
BMD-74	External 24 V DC (200 V)	BMD-74
BMD-75	External 24 V DC (200 V)	BMD-75
BMD-76	External 24 V DC (200 V)	BMD-76
BMD-77	External 24 V DC (200 V)	BMD-77
BMD-78	External 24 V DC (200 V)	BMD-78
BMD-79	External 24 V DC (200 V)	BMD-79
BMD-80	External 24 V DC (200 V)	BMD-80
BMD-81	External 24 V DC (200 V)	BMD-81
BMD-82	External 24 V DC (200 V)	BMD-82
BMD-83	External 24 V DC (200 V)	BMD-83
BMD-84	External 24 V DC (200 V)	BMD-84
BMD-85	External 24 V DC (200 V)	BMD-85
BMD-86	External 24 V DC (200 V)	BMD-86
BMD-87	External 24 V DC (200 V)	BMD-87
BMD-88	External 24 V DC (200 V)	BMD-88
BMD-89	External 24 V DC (200 V)	BMD-89
BMD-90	External 24 V DC (200 V)	BMD-90
BMD-91	External 24 V DC (200 V)	BMD-91
BMD-92	External 24 V DC (200 V)	BMD-92
BMD-93	External 24 V DC (200 V)	BMD-93
BMD-94	External 24 V DC (200 V)	BMD-94
BMD-95	External 24 V DC (200 V)	BMD-95
BMD-96	External 24 V DC (200 V)	BMD-96
BMD-97	External 24 V DC (200 V)	BMD-97
BMD-98	External 24 V DC (200 V)	BMD-98
BMD-99	External 24 V DC (200 V)	BMD-99
BMD-100	External 24 V DC (200 V)	BMD-100

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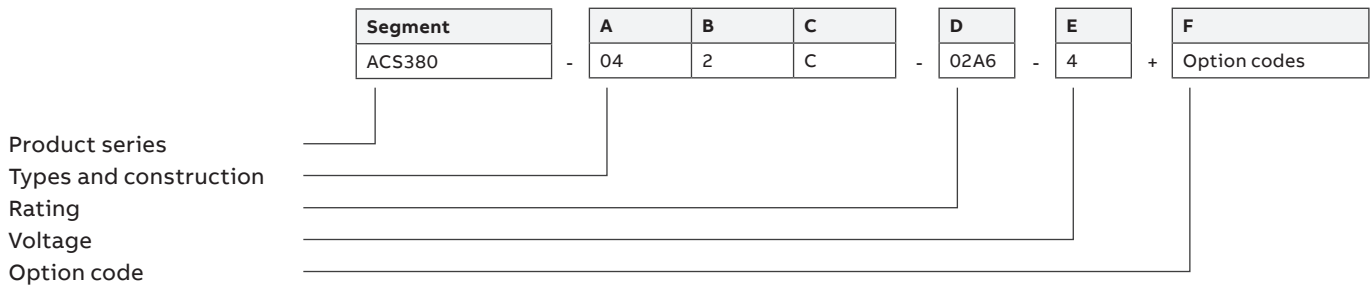
Ordering information

The type designation indicates the specifications and configuration of the drive.

The table shows the primary drive variants.

Sample type code 1: ACS380-042S-02A6-4 (Standard variant, not possible to add options as pluscode)

Sample type code 2: ACS380-042C-02A6-4+K475+ L535 (Configured variant, possible to add options as pluscode)



Basic codes		
Segment	Option	Description
A	Construction	04 = Module, IP20
B	EMC filter	0 = C3 (3-phase 400 V) or C4 (1-phase 230 V) 2 = C2 (3-phase 400 V, 1-phase 230 V)
C	Connectivity	S = Standard variant (I/O and Modbus), C = Configured variant
D	Current rating	For example, 02A6 refers to a nominal output current of 2.6 A
E	Voltage rating	1 = 1-phase 230 V, 4 = 3-phase 400 V

Option codes for configured variant (ACS380-04xC) and MRP codes for loose items					
Segment	Option	Option code	MRP code	Type designation	Description
F	Fieldbus adapter module	+K451	68469341	FDNA-01	DeviceNet™
		+K454	68469325	FPBA-01	Profibus-DP
		+K457	68469376	FCAN-01	CANopen®
		+K469	3AUA0000072069	FECA-01	EtherCAT®
		+K470	3AUA0000072120	FEPL-02	Ethernet POWERLINK
		+K490	3AXD50000192786	FEIP-21	EtherNet/IP™
		+K491	3AXD50000049964	FMBT-21	Modbus/TCP
		+K492	3AXD50000192779	FPNO-21	PROFINET IO
	I/O	+L511	3AXD50000022162	BREL-01	External relay option (4 x relay) (side option)
		+L515	3AXD50000191635	BIO-01	I/O option module (front option, can be used together with fieldbus)
		+L534	3AXD50000022164	BAPO-01	External 24 V DC (side option)
		+L535	3AXD50000022163	BTAC-02	HTL/TTL encoder interface + External 24 V DC (side option)
		+L538	3AXD50000021262	BMIO-01	I/O & Modbus option module (front option)
Safety functions module	+Q986	3AXD50000112821	FSPS-21	PROFIsafe with PROFINET IO	
The product package includes a quick installation and start-up guide in several languages. The option code determines the language variants of the hardware and firmware manuals.	Printed manual languages:	+R700			English
		+R701			German
		+R702			Italian
		+R703			Dutch
		+R704			Danish
		+R705			Swedish
		+R706			Finnish
		+R707			French
		+R708			Spanish
		+R709			Portuguese (Portugal)
		+R711			Russian
		+R712			Chinese
		+R714			Turkish
	+R713			Polish	

Ratings, types and voltages

1-phase, $U_N = 230$ V (range 200 to 240 V). The power ratings are valid at nominal voltage 230 V (0.25 to 3.0 kW).

Drive type	Frame size	Nominal ratings		Light-duty use		Heavy-duty use		Max. output current I_{MAX} (A)
		I_N (A)	P_N (kW)	I_{Ld} (A)	P_{Ld} (kW)	I_{Hd} (A)	P_{Hd} (kW)	
ACS380-04xx-02A4-1	R0	2.4	0.37	2.3	0.37	1.8	0.25	3.2
ACS380-04xx-03A7-1	R0	3.7	0.55	3.5	0.55	2.4	0.37	4.3
ACS380-04xx-04A8-1	R1	4.8	0.75	4.6	0.75	3.7	0.55	6.7
ACS380-04xx-06A9-1	R1	6.9	1.1	6.6	1.1	4.8	0.75	8.6
ACS380-04xx-07A8-1	R1	7.8	1.5	7.4	1.5	6.9	1.1	12.4
ACS380-04xx-09A8-1	R2	9.8	2.2	9.3	2.2	7.8	1.5	14.0
ACS380-04xx-12A2-1	R2	12.2	3	11.6	3	9.8	2.2	17.6

3-phase, $U_N = 400$ V (range 380 to 480 V). The power ratings are valid at nominal voltage 400 V (0.37 to 22 kW).

Drive type	Frame size	Nominal ratings		Light-duty use		Heavy-duty use		Max. output current I_{MAX} (A)
		I_N (A)	P_N (kW)	I_{Ld} (A)	P_{Ld} (kW)	I_{Hd} (A)	P_{Hd} (kW)	
ACS380-04xx-01A8-4	R0	1.8	0.55	1.7	0.55	1.2	0.37	2.2
ACS380-04xx-02A6-4	R1	2.6	0.75	2.5	0.75	1.8	0.55	3.2
ACS380-04xx-03A3-4	R1	3.3	1.1	3.1	1.1	2.6	0.75	4.7
ACS380-04xx-04A0-4	R1	4	1.5	3.8	1.5	3.3	1.1	5.9
ACS380-04xx-05A6-4	R1	5.6	2.2	5.3	2.2	4	1.5	7.2
ACS380-04xx-07A2-4	R1	7.2	3	6.8	3	5.6	2.2	10.1
ACS380-04xx-09A4-4	R1	9.4	4	8.9	4	7.2	3	13
ACS380-04xx-12A6-4	R2	12.6	5.5	12	5.5	9.4	4	16.9
ACS380-04xx-17A0-4	R3	17	7.5	16.2	7.5	12.6	5.5	22.7
ACS380-04xx-25A0-4	R3	25	11	23.8	11	17	7.5	30.6
ACS380-04xx-032A-4	R4	32	15	30.5	15	25	11	45
ACS380-04xx-038A-4	R4	38	18.5	36	18.5	32	15	57.6
ACS380-04xx-045A-4	R4	45	22	42.8	22	38	18.5	68.4
ACS380-04xx-050A-4	R4	50	22	48	22	45	22	81

Nominal ratings

I_N	Nominal output current available continuously without overloadability at 50 °C.
P_N	Typical motor power in no-overload use.

Maximum output current

I_{max}	Maximum output current. Available for 2 seconds at start, then as long as allowed by drive temperature.
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Heavy-duty use

I_{Hd}	Output current allowing 150% I_{Hd} for 1 minute every 10 minutes at 50 °C.
P_{Hd}	Typical motor power in heavy-duty use.

Light-duty use

I_{Ld}	Output current allowing 110% I_{Ld} for 1 minute every 10 minutes at 50 °C.
P_{Ld}	Typical motor power in light-overload use.

The ratings apply at 50 °C ambient temperatures.

For derating at higher altitudes, temperatures or switching frequencies, see the user's HW manual, document code: 3AXD5000029274.

