

Mains connection	
Voltage and power range	1-phase, 200 to 240 V, +10%/-15% 0.25 to 3.0 kW (1/3 to 3 HP) 3-phase, 200 to 240 V, +10%/-15% 0.25 to 15 kW (1/3 to 20 HP) 3-phase, 380 to 480 V, +10%/-15% 0.37 to 22 kW (1/2 to 30 HP)
Frequency	50/60 Hz $\pm$ 5%
Efficiency class (IEC 61800-9-2)	IE2
Common DC connection	
DC voltage level	-1 and -2 types 270 to 324 V $\pm$ 10% -4 types 513 to 648 V $\pm$ 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	$\pm$ 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	
Ecodesign (EU) 2019/1781	
Environmental system ISO 14001	
Waste electrical and electronic equipment directive (WEEE) 2002/96/EC	
RoHS directive 2011/65/EU	
EAC, KC, RCM	

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	3.0	11.6	3.0	9.8	2.2	17.6

3-phase, $U_N = 230$ V (range 200 to 240 V). The power ratings are valid at nominal voltage 230 V (0.25 to 15 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-02A4-2	R1	2.4	0.37	2.3	0.37	1.8	0.25	3.2
ACS380-04xx-03A7-2	R1	3.7	0.55	3.5	0.55	2.4	0.37	4.3
ACS380-04xx-04A8-2	R1	4.8	0.75	4.6	0.75	3.7	0.55	6.7
ACS380-04xx-06A9-2	R1	6.9	1.1	6.6	1.1	4.8	0.75	8.6
ACS380-04xx-07A8-2	R1	7.8	1.5	7.5	1.5	6.9	1.1	12.4
ACS380-04xx-09A8-2	R1	9.8	2.2	9.3	2.2	7.8	1.5	14.0
ACS380-04xx-12A2-2	R2	12.2	3.0	11.6	3.0	9.8	2.2	17.6
ACS380-04xx-17A5-2	R3	17.5	4.0	16.7	4.0	12.2	3.0	22.0
ACS380-04xx-25A0-2	R3	25.0	5.5	24.2	5.5	17.5	4.0	31.5
ACS380-04xx-032A-2	R4	32.0	7.5	30.8	7.5	25.0	5.5	45.0
ACS380-04xx-048A-2	R4	48.0	11.0	46.2	11.0	32.0	7.5	57.6
ACS380-04xx-055A-2	R4	55.0	15.0	52.8	15.0	48.0	11.0	86.4

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	4.0	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	4.0	1.5	7.2
ACS380-04xx-07A2-4	R1	7.2	3.0	6.8	3.0	5.6	2.2	10.1
ACS380-04xx-09A4-4	R1	9.4	4.0	8.9	4.0	7.2	3.0	13.0
ACS380-04xx-12A6-4	R2	12.6	5.5	12.0	5.5	9.4	4.0	16.9
ACS380-04xx-17A0-4	R3	17.0	7.5	16.2	7.5	12.6	5.5	22.7
ACS380-04xx-25A0-4	R3	25.0	11.0	23.8	11.0	17.0	7.5	30.6
ACS380-04xx-032A-4	R4	32.0	15.0	30.5	15.0	25.0	11.0	45.0
ACS380-04xx-038A-4	R4	38.0	18.5	36.0	18.5	32.0	15.0	57.6
ACS380-04xx-045A-4	R4	45.0	22.0	42.8	22.0	38.0	18.5	68.4
ACS380-04xx-050A-4	R4	50.0	22.0	48.0	22.0	45.0	22.0	81.0

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: 3AXD50000029274.

Dimensions and weights (IP20 / UL open type)

Frame size	H1 (mm)	H2 (mm)	H3 (mm)	W1 (mm)	W2 (mm)	W3 (mm)	D1 (mm)	D2 (mm)	M1 (mm)	M2 (mm)	Weight (kg)
R0	205	223	170	70	86	94	176	191	50	191	1.4
R1	205	223	170	70	86	94	176	191	50	191	1.4
R2	205	223	170	95	111	119	176	191	75	191	2.0
R3	205	223	170	170	186	194	176	191	148	191	3.3
R4	205	240	170	260	276	284	181	196	234	191	5.3

H1 = Mounting surface height (back)

H2 = Height, total

H3 = Enclosure height (front)

W1 = Width without side option

W2 = Width with side option BAPO-01

W3 = Width with side optios BTAC-02, BREL-01

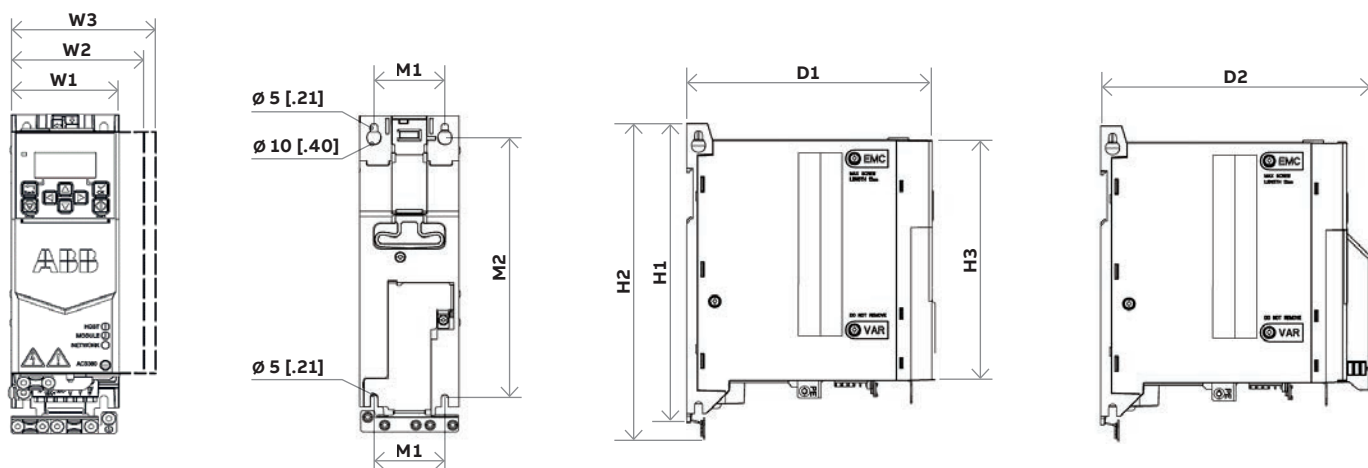
D1 = Depth

D2 = Depth with deeper cover *)

M1 = Mounting hole distance 1

M2 = Mounting hole distance 2

*) Deeper cover (with BIO-01 or FSPS-21) will increase normal depth (D1) by 15 mm



Dimensions and weights (drive with UL type 1 kit)

Frame size	H1 (mm)	H2 (mm)	H3 (mm)	W1 (mm)	W2 (mm)	W3 (mm)	D (mm)	M1 (mm)	M2 (mm)	Weight (kg)
R0	205	285	247	70	86	94	191	50	191	1.8
R1	205	293	247	70	86	94	191	50	191	1.8
R2	205	293	247	95	111	119	191	75	191	2.5
R3	205	329	261	170	186	194	191	148	191	4.0
R4	205	391	312	260	276	284	196	234	191	6.5

H1 = Mounting surface height (back)

H2 = Height with UL Type 1 kit, total

H3 = Height with UL type 1 kit, enclosure (front)

W1 = Width without side option

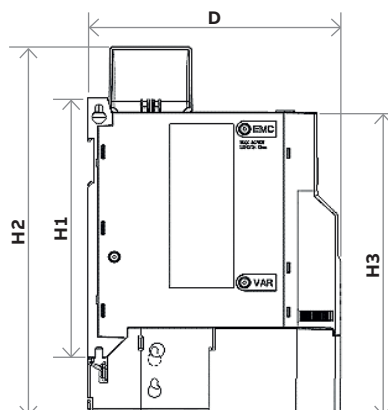
W2 = Width with side option BAPO-01

W3 = Width with side optios BTAC-02, BREL-01

D = Depth

M1 = Mounting hole distance 1

M2 = Mounting hole distance 2



The ACS380 machinery drive comes in several variants ensuring seamless integration into machines and connecting perfectly to automation systems.

Standard variant (ACS380-04xS)

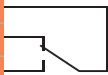
Meets the most typical machinery requirements.

A standard variant (ACS380-04xS) includes BMIO-01 module in the delivery to support Modbus RTU and a wide range of digital and analog I/O. In addition, this construction variant has one side option slot. Options are available as loose items via mrp ordering codes.

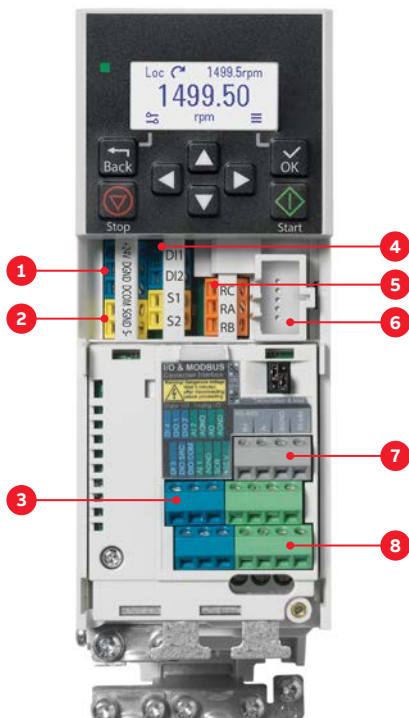
The standard variant includes:

- 4 DI + 2 DI/DO + 2 AI + 1 AO + 1 RO + STO
- Embedded Modbus RTU

Default I/O connections of standard variant (ACS380-04xS)

Terminals	Descriptions
Aux. voltage output and digital connections	
+24 V	Aux. voltage output +24 V DC, max. 250 mA
DGND	Aux. voltage output common
DCOM	Digital input common for all
DI 1	Digital input 1: Stop (0)/Start (1)
DI 2	Digital input 2: Forward (0)/Reverse (1)
DI 3	Digital input 3: Speed selection
DI 4	Digital input 4: Speed selection
DIO 1	Digital input function: Ramp set 1 (0)/Ramp set 2 (1)
DIO 2	Digital output function: Ready to run (0)/Not ready (1)
DIO SRC	Signal cable shield (screen)
DIO COM	Digital input common for all
Reference voltage and analog I/O	
AI 1	Output frequency/Speed reference (0...10 V)
AGND	Analog input circuit common
AI 2	Not configured
AGND	Analog input circuit common
AO	Output frequency (0...20 mA)
AGND	Analog output circuit common
SCR	Signal cable shield (screen)
+10 V	Reference voltage
Safe torque off (STO)	
S+	Safe torque-off function. Connected at the factory. The drive starts only when both circuits are closed. Refer to the Safe torque off function in the hardware manual.
SGND	
S 1	
S 2	
Relay output	
RC	 No fault [Fault (-1)]
RA	
RB	
EIA-485 Modbus RTU	
B+	Embedded Modbus RTU (EIA-485)
A-	
BGND	
Shield	
Termination	

Default I/O connections of the standard variant



1. Auxiliary voltage outputs
2. Safe torque off connections
3. Digital inputs and outputs
4. Digital inputs
5. Relay output connection
6. Cold configuration connection for CCA-01
7. EIA-485 Modbus RTU
8. Analog inputs and outputs

Configured variant (ACS380-04xC)

Simplified ordering by one single ordering code and possibility for preinstalled options.

A configured variant (ACS380-04xC) can be configured with different options covering digital and analog I/O, fieldbus communication, speed feedback and external 24 V DC supply.

The configured variant includes:

- 2 DI + 1 RO + STO + one preconfigured fieldbus

Options ordered with the pluscode. (See pluscodes, page 13):

- **Fieldbus options**
PROFIBUS, PROFINET/PROFIsafe, EtherNet/IP™, Modbus TCP/IP, EtherCAT®, POWERLINK, DeviceNet™, CanOpen®
- **One of following side options**
 - HTL/TTL encoder & ext. 24 V DC supply (BTAC-02)
 - 4 x relay output module (BREL-01)
 - External 24 V DC supply (BAPO-01)
- **One front I/O option**
can be used together with fieldbus
3 DI + 1 DO + 1 AI + 1 AO (BIO-01)

Default connections of configured variant (ACS380-04xC)

Terminals	Descriptions
Aux. voltage output and digital connections	
+24 V	Aux. voltage output +24 V DC, max. 250 mA
DGND	Aux. voltage output common
DCOM	Digital input common for all
DI 1	Digital input 1: Stop (0)/Start (1)
DI 2	Digital input 2: Forward (0)/Reverse (1)
Safe torque off (STO)	
S+	Safe torque off function. Connected at the factory. The drive starts only when both circuits are closed. Refer to the Safe torque off function in the hardware manual.
SGND	
S 1	
S 2	
Relay output	
RC	Fault (-1)
RA	250 V AC/30 V DC
RB	2 A
Option module connections	
See table on page 17 for available fieldbus connection options and table on page 22 for I/O options.	

ACS380 configured variant (ACS380-04xC)



Base variant (ACS380-04xN)

Offers maximum flexibility with minimum stock items for varying machine building needs.

Base variant can be ordered with any of the connectivity or I/O option as loose item.

Options:

Fieldbus options

PROFIBUS, PROFINET/PROFIsafe, EtherNet/IP™, Modbus TCP/IP, EtherCAT®, POWERLINK, DeviceNet™, CanOpen®

One of following side options

- HTL/TTL encoder & ext. 24 V DC supply (BTAC-02)
- 4 x relay output module (BREL-01)
- External 24 V DC supply (BAPO-01)

One front I/O option

can be used together with fieldbus
3 DI + 1 DO + 1 AI + 1 AO (BIO-01)

Default connections of base variant (ACS380-04xN)

Terminals	Descriptions
Aux. voltage output and digital connections	
+24 V	Aux. voltage output +24 V DC, max. 250 mA
DGND	Aux. voltage output common
DCOM	Digital input common for all
DI 1	Digital input 1: Stop (0)/Start (1)
DI 2	Digital input 2: Forward (0)/Reverse (1)
Safe torque off (STO)	
S+	Safe torque off function. Connected at the factory. The drive starts only when both circuits are closed. Refer to the Safe torque off function in the hardware manual.
SGND	
S 1	
S 2	
Relay output	
RC	Fault (-1)
RA	250 V AC/30 V DC
RB	2 A
Option module connections	
See table on page 17 for available fieldbus connection options and table on page 22 for I/O options.	

ACS380 base variant (ACS380-04xN)

