ABB machinery drives

Quick installation and start-up guide ACS380 Drive



Power and productivity for a better world™

Safety instructions

Read the full safety instructions in the *ACS380 Hardware manual* (3AXD50000029274 [English]).

WARNING! Obey these safety instructions to prevent physical injury or death, or damage to the equipment. If you are not a qualified electrician, do not do electrical installation or maintenance work.

- When you install the drive, make sure that dust does not go into the drive.
- When the drive or connected equipment is energized, do not do work on the drive, motor cable, motor, control cables or control circuits.
- After you disconnect the input power, wait for 5 minutes to let the intermediate circuit capacitors discharge.
- Make sure that the installation is not energized:
  - Use a multimeter with an impedance of at least 1 Mohm.
  - Make sure that the voltage between the drive output terminals (U, V, W) and the ground (PE) is 0 V.
  - Make sure that the voltage between the drive input power terminals (L1, L2, L3) and the ground (PE) is 0 V.
  - Make sure that the voltage between the DC and brake resistor terminals (UDC+, UDC- and R-) and the ground (PE) is 0 V.
- If you use a permanent magnet synchronous motor, do not do work on the drive when the motor rotates. A permanent magnet motor that rotates energizes the drive and the input power terminals.

WARNING! The installation, start-up and operation of this equipment requires detailed instructions. Refer to this quick guide and the user interface guide in the drive package. Retain the guides with this device at all times. For more information, refer to the hardware manual and firmware manual. You can download these manuals from the ABB website or order hard copies of the manuals with the delivery.

1. Examine the installation area

The drive has an ingress protection classification of IP20 for cabinet installation.

Make sure that in the installation area:

- There is sufficient cooling and prevent hot air recirculation.
- The ambient conditions obey the technical specifications. Refer to *Ambient conditions*.
- The mounting surface is non-flammable and can hold the weight of the drive. Refer to *Dimensions and weights*.
- Materials near the drive are non-flammable.
- There is sufficient space above and below the drive for cooling and to do maintenance work. Refer to *Free space requirements*.

2. Install the drive

You can install the drive with screws or to a DIN rail.

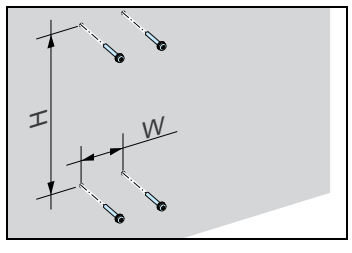
Installation requirements:

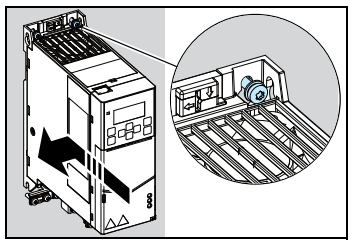
- Make sure that there is a minimum of 75 mm of free space at the top and bottom of the drive for cooling air.
- Install R0 drives upright. R0 drives do not have a fan.
- You can install R1, R2 and R3 drives tilted by up to 90 degrees.
- You can install several drives side by side. Side-mounted options require approximately 20 mm of space on the right side of the drive.

WARNING! Do not install the drive upside down. Make sure that the cooling air exhaust (at the top) is always above the cooling air inlet (at the bottom).

To install the drive with screws

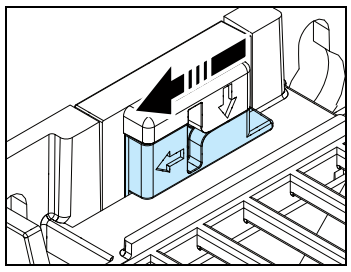
1. Make marks onto the surface for the mounting holes. Refer to *Dimensions and weights*.
2. Make the holes for the mounting screws and install suitable plugs or anchors.
3. Start to tighten the screws into the mounting holes.
4. Install the drive onto the mounting screws.
5. Tighten the mounting screws.

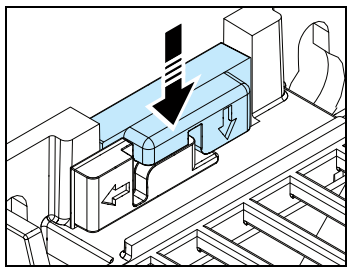




To install the drive to a DIN rail

1. Move the locking part to the left.
2. Push and hold the locking button down.
3. Put the top tabs of the drive onto the top edge of the DIN installation rail.
4. Put the drive against the bottom edge of the DIN installation rail.
5. Release the locking button.
6. Move the locking part to the right.
7. Make sure that the drive is correctly installed.
8. To remove the drive, use a flat-head screwdriver to open the locking part.





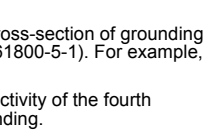
3. Measure the insulation resistance

Drive: Do not do voltage tolerance or insulation resistance tests on the drive, because this can cause damage to the drive.

Input power cable: Before you connect the input power cable, measure the insulation of the input power cable. Obey the local regulations.

Motor and motor cable:

1. Make sure that the motor cable is connected to the motor and disconnected from the drive output terminals T1/U, T2/V and T3/W.
2. Use a voltage of 500 V DC to measure the insulation resistance between each phase conductor and the protective earth conductor. The insulation resistance of an ABB motor must be more than 100 Mohm (at 25 °C/77 °F). For the insulation resistance of other motors, refer to the manufacturer's documentation.
   Moisture in the motor decreases the insulation resistance. If you think that there is moisture in the motor, dry the motor and do the measurement again.



4. Select the cables

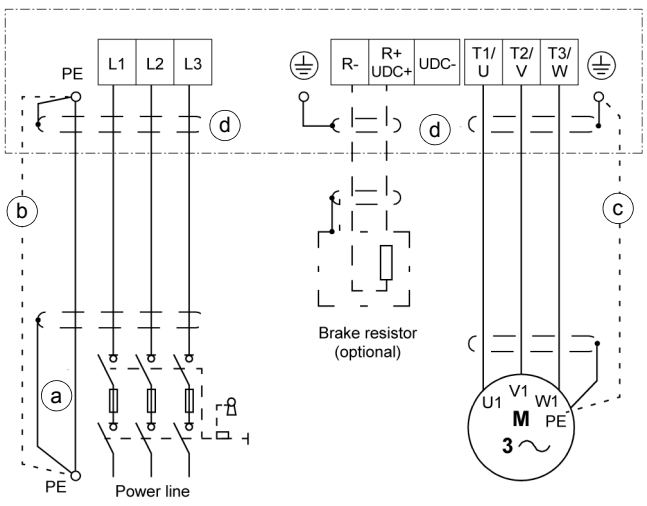
Input power cable: For the best EMC perfomance, use a symmetrical shielded cable and two grounding conductors.

Motor cable: Use a symmetrical shielded cable.

Control cable: Use a double-shielded twisted-pair cable for analog signals. Use a single-shielded cable for digital, relay and I/O signals. Use separate cables for analog and relay signals.

5. Connect the power cables

Connection diagram



a. Two grounding conductors. Use two conductors if the cross-section of grounding conductor is less than 10 mm^2 Cu or 16 mm^2 Al (IEC/EN 61800-5-1). For example, use the cable shield in addition to the fourth conductor.

b. Separate grounding cable (line side). Use it if the conductivity of the fourth conductor or shield is not sufficient for the protective grounding.

c. Separate grounding cable (motor side). Use it if the conductivity of the shield is not sufficient for the protective grounding, or there is no symmetrically constructed grounding conductor in the cable.

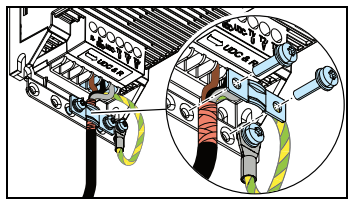
d. 360-degree grounding of the cable shield. Required for the motor cable and brake resistor cable, recommended for the input power cable.

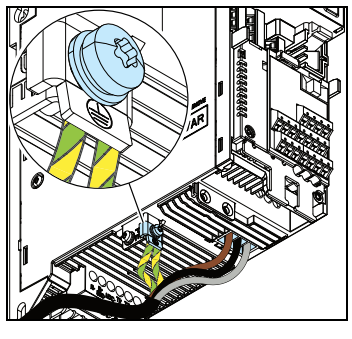
Connection procedure

WARNING! Obey the safety instructions in the *ACS380 Hardware manual* (3AXD50000029274 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

WARNING! If the drive is connected to an IT (non-grounded) system or to a corner-grounded TN system, disconnect the EMC filter grounding screw.

1. Strip the motor cable.
2. Ground the motor cable shield under the grounding clamp.
3. Twist the motor cable shield into a bundle, mark it accordingly and connect it to the grounding terminal.
4. Connect the phase conductors of the motor cable to the T1/U, T2/V and T3/W motor terminals. Torque the terminals to 0.8 N·m (7 lbf·in).
5. If it is applicable, connect the brake resistor cable to the R- and UDC+ terminals. Torque the terminals to 0.8 N·m (7 lbf·in). Use a shielded cable and ground the shield under the grounding clamp.
6. Strip the input power cable.
7. If the input power cable has a shield, twist it into a bundle, mark it and connect it to the grounding terminal.
8. Connect the PE conductor of the input power cable to the grounding terminal. If it is necessary, use a second PE conductor.
9. Connect the phase conductors of the input power cable to the L1, L2 and L3 input terminals. Torque the terminals to 0.8 N·m (7 lbf·in).
10. Mechanically attach the cables on the outside of the drive.





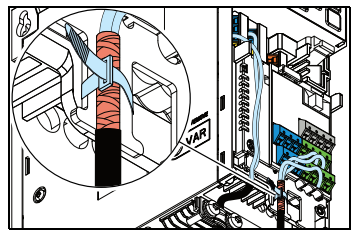
6. Connect the control cables

Connection procedure

Do the connections according to the default control connections of the application macro that you select. For the connections of the factory default macro (ABB standard macro), refer to *Default I/O connections (ABB standard macro)*. For the other macros, refer to the *ACS380 Firmware manual* (3AXD50000029275 [English]).

Keep the signal wire pairs twisted as near to the terminals as possible to prevent inductive coupling.

1. Strip a part of the outer shield of the control cable for grounding.
2. Use a cable tie to ground the outer shield to the grounding tab.
3. Strip the control cable conductors.
4. Connect the conductors to the correct control terminals. Torque the terminals to 0.5 N·m (4.4 lbf·in).
5. Connect the shields of the twisted pairs and grounding wires to the SCR terminal. Torque the terminals to 0.5 N·m (4 lbf·in).
6. Mechanically attach the control cables on the outside of the drive.



Default I/O connections (ABB standard macro)

For the standard variant (I/O & Modbus) (type ACS380-04x**S**).

Terminals	Descriptions
	Digital I/O connections
+24V	Aux. +24 V DC, max. 200 mA
DGND	Aux. voltage output common
DCOM	Digital input common
DI1	Stop (0) / Start (1)
DI2	Forward (0) / Reverse (1)
DI3	Speed selection
DI4	Speed selection
DIO1	Ramp 1 (0) / Ramp 2 (1)
DIO2	Ready (0) / Not ready (1)
DIO SRC	Digital output auxiliary voltage
DIO COM	Digital input/output common
	Analog I/O
AI1	Freq. ref. / Speed ref. (0...10 V)
AGND	Analog input circuit common
AI2	Not configured
AGND	Analog input circuit common
AO	Output frequency (0...20 mA)
AGND	Analog output circuit common
SCR	Signal cable shield (screen)
+10V	Reference voltage
	Safe torque off (STO)
S+	Safe torque off function. Connected at factory.
SGND	Drive starts only if both circuits are closed.
S1	
S2	
	Relay output
RC	Relay output 1
RA	No fault [Fault (-1)]
RB	
	EIA-485 Modbus RTU
B+	Embedded Modbus RTU (EIA-485)
A-	
BGND	
Shield	
Termination	

Fieldbus connections

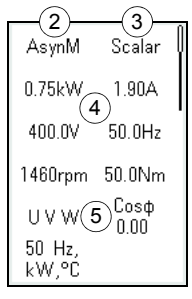
For the configured drives with the preconfigured fieldbus protocol (type ACS380-04x**C**).

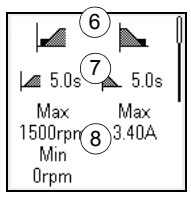
Terminals	Descriptions
	Digital I/O connections
+24V	Aux. +24 V DC, 200 mA
DGND	Aux. voltage output common
DCOM	Digital input common
DI1	Fault reset
DI2	Not configured
	Safe torque off (STO)
S+	Safe torque off function. Connected at factory.
SGND	Drive starts only if both circuits are closed.
S1	
S2	
	Relay output
RC	Relay output 1
RA	No fault [Fault (-1)]
RB	
	Extension module connections
DSUB9 CANopen	+K457 FCAN-01-M CANopen
DSUB9 Profibus DP	+K454 FPBA-01-M Profibus DP
RJ45 X 2 EtherCAT	+K469 FECA-01-M EtherCAT
RJ45 X 2 Ethernet IP	+K475 FENA-21-M Ethernet/IP, Profinet, Modbus TCP
RJ45 X 2 Profinet	+K495 BCAN-11 CANopen interface
RJ45 X 2 Modbus TCP	
Terminal Block CANopen	

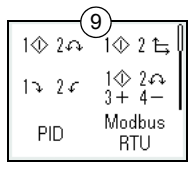
7. Start up the drive

For information on the user interface, refer to the *ACS380 User interface guide* (3AXD50000022224 [English]). For the first start-up, select the applicable region.

1. Select the unit (international or US).
   The drive recognizes the connected adapter and sets the correct settings.
2. In the *Motor data* view, set the motor type:
   AsynM: Asynchronous motor
   PMSM: Permanent magnet synchronous motor
   SynMR: Synchronous reluctance motor
3. Set the motor control mode:
   Vector: Speed reference. This is suitable for most cases. The drive does an automatic stand-still ID run.
   Scalar: Frequency reference. Do not use this mode for permanent magnet synchronous motors.
   Use this mode when:
   - The number of motors can change.
   - The nominal motor current is less than 20% of the nominal drive current.
4. Set the nominal motor values.
5. Examine the direction of the motor.
   If it is necessary, set the motor direction with the **Phase order** setting or with the phase order of the motor cable.
6. In the *Motor control* view, set the start and stop mode.
7. Set the acceleration and deceleration times.
8. Set the maximum and minimum speeds.
9. In the *Control macros* view, select the applicable macro.
   To configure fieldbus communications, refer to *Configure fieldbus communications*.
10. Tune the drive paramaters to the application. You can use the Assistant control panel (ACS-AP-x) or the DriveComposer PC tool. Refer to the *ACS380 Firmware manual* (3AXD50000029275 [English]).







Configure fieldbus communications

If you have a configured variant with the preconfigured fieldbus protocol, you can control the drive from an external control system through the fieldbus.

When the fieldbus adapter is connected to the drive, the drive control program sets the applicable parameters. The preconfigured settings apply to the CANopen, EtherCAT, Profibus and Profinet (default in FENA-21 adapter) protocols. If you have a BCAN-11 adapter, refer to the exceptions in the table.

To configure fieldbus communications:

1. Power up the drive.
2. The drive software recognizes the connected fieldbus adapter and selects the correct fieldbus control macro.
   The changed parameters which apply to all fieldbus adapters:

Parameter	Setting (general)	Setting (BCAN)
20.01 Ext1 commands	Fieldbus A	Embedded fieldbus
20.03 Ext1 in1	Not selected	Not selected
20.04 Ext1 in2	Not selected	Not selected
22.11 Ext1 speed ref1	FB A ref1	EFB ref1
22.22 Constant speed sel1	Not selected	Not selected
22.23 Constant speed sel 2	Not selected	Not selected
23.11 Ramp set selection	Acc/Dec time 1	Acc/Dec time 1
28.11 Ext1 frequency ref1	FB A ref1	EFB ref1
28.22 Constant frequency sel1	Not selected	Not selected
28.23 Constant frequency sel2	Not selected	Not selected
28.71 Freq. ramp set selection	Acc/Dec time 1	Acc/Dec time 1
31.11 Fault reset selection	DI2	DI1
50.01 FBA A enable	Enable	N/A
50.02 FBA A comm loss func	Fault	N/A

The parameters that apply only to specific fieldbus adapters:

Parameter	Setting
CANopen (FCAN-01-M)	
51.05 Profile	CiA 402
EtherCAT	
51.02 Profile	CiA 402
Profibus	
51.02 Node address	3
51.05 Profile	ABB Drives
52.01 FBA A data in1	SW 16 bit
52.02 FBA A data in2	Act1 16 bit
53.01 FBA A data out1	CW 16 bit
53.02 FBA A data out2	Ref1 16 bit
Profinet	
51.02 Protocol/Profile	PNIO ABB Pro
51.04 IP configuration	Static IP
52.01 FBA A data in1	SW 16 bit
52.02 FBA A data in2	Act1 16 bit
53.01 FBA A data out1	CW 16 bit
53.02 FBA A data out2	Ref 1 16 bit
Modbus TCP/IP	
51.02 Protocol/Profile	MB/TCP ABB C
Ethernet IP	
51.02 Protocol/Profile	EIP ABB Pro
CANopen (BCAN-11)	
58.01 Protocol enable	CANopen

3. You can see the selected fieldbus control macro in the *Control macros* view or from parameter 96.05.
4. If you need to change other parameters, you can set them manually. Refer to the *ACS380 Firmware manual* (3AXD50000029275 [English]) and the applicable fieldbus adapter documentation.

Warnings and faults generated by the drive

Warning	Fault	Description
A2A1	2281	Warning: Current calibration is done at the next start. Fault: Output phase current measurement fault.
A2B1	2310	Overcurrent. The output current is more than the internal limit. This can be caused by an earth fault or phase loss.
A2B3	2330	Earth leakage. A load unbalance that is typically caused by an earth fault in the motor or the motor cable.
A2B4	2340	Short circuit. There is a short circuit in the motor or the motor cable.
	3130	Input phase loss. The intermediate DC circuit voltage oscillates.
	3181	Cross connecion. The input and motor cable connections are incorrect.
A3A1	3210	DC link overvoltage. There is an overvoltage in the intermediate DC circuit.
A3A2	3220	DC link undervoltage. There is an undervoltage in the intermediate DC circuit.
	3381	Output phase loss. All three phases are not connected to the motor.
A5A0	5091	Safe torque off. The Safe torque off (STO) function is on.
	6681	EFB communication loss. Break in embedded fieldbus communication.
	7510	FBA A communication. Communication lost between drive and fieldbus adapter.
AFF6		Identification run. The motor ID run occurs at the next start.
FA81		Safe torque off 1. The Safe torque off circuit 1 is broken.
FA82		Safe torque off 2. The Safe torque off circuit 2 is broken.

For the complete list of warnings and faults, refer to the *ACS380 Firmware manual* (3AXD50000029275 [English]).

Ratings

IEC ratings

Type ACS380-04xx	Input rating	Input with choke	Max. current	Output ratings						Frame size
				Nominal use		Light-duty use		Heavy-duty use		
	I_{1N}	I_{1N}	I_{max}	I_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}	
	A	A	A	A	kW	A	kW	A	kW	
1-phase U_N = 200...240 V										
02A4-1	5.0	4.2	3.2	2.4	0.37	2.3	0.37	1.8	0.25	R0
03A7-1	7.8	6.4	4.3	3.7	0.55	3.5	0.55	2.4	0.37	R0
04A8-1	10.1	8.3	6.7	4.8	0.75	4.6	0.75	3.7	0.55	R1
06A9-1	14.5	11.9	8.6	6.9	1.10	6.6	1.10	4.8	0.75	R1
07A8-1	16.4	13.5	12.4	7.8	1.5	7.4	1.5	6.9	1.1	R1
09A8-1	20.6	17.0	14.0	9.8	2.2	9.3	2.2	7.8	1.5	R2
12A2-1	25.6	21.1	17.6	12.2	3.0	11.6	3.0	9.8	2.2	R2
3-phase U_N = 380...480 V										
01A8-4	2.9	1.8	2.2	1.8	0.55	1.7	0.55	1.2	0.37	R0
02A6-4	4.2	2.6	3.2	2.6	0.75	2.5	0.75	1.8	0.55	R1
03A3-4	5.3	3.3	4.7	3.3	1.1	3.1	1.1	2.6	0.75	R1
04A0-4	6.4	4.0	5.9	4.0	1.5	3.8	1.5	3.3	1.1	R1
05A6-4	9.0	5.6	7.2	5.6	2.2	5.3	2.2	4.0	1.5	R1
07A2-4	11.5	7.2	10.1	7.2	3.0	6.8	3.0	5.6	2.2	R1
09A4-4	15.0	9.4	13.0	9.4	4.0	8.9	4.0	7.2	3.0	R1
12A6-4	20.2	12.6	16.9	12.6	5.5	12.0	5.5	9.4	4.0	R2
17A0-4	27.2	17.0	22.7	17.0	7.5	16.2	7.5	12.6	5.5	R3
25A0-4	40.0	25.0	30.6	25.0	11.0	23.8	11.0	17.0	7.5	R3

3AXD10000299801.xls

NEMA ratings

Type ACS380-04xx	Input rating	Input with choke	Output ratings				Frame size
			Nominal use		Heavy-duty use		
	I_{1N}	I_{1N}	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}	
	A	A	A	hp	A	hp	
3-phase U_N = 460 V (440…480 V)							
01A8-4	2.6	1.6	1.6	0.75	1.1	0.50	R0
02A6-4	3.4	2.1	2.1	1.0	1.6	0.75	R1
03A3-4	4.8	3.0	3.0	1.5	2.1	1.0	R1
04A0-4	5.4	3.4	3.4	2.0	3.0	1.5	R1
05A6-4	7.7	4.8	4.8	2.0	3.4	2.0	R1
07A2-4	9.6	6.0	6.0	3.0	4.0	2.0	R1
09A4-4	12.2	7.6	7.6	5.0	4.8	3.0	R1
12A6-4	17.6	11.0	11.0	7.5	7.6	5.0	R2
17A0-4	22.4	14.0	14.0	10.0	11.0	7.5	R3
25A0-4	33.6	21.0	21.0	15.0	14.0	10.0	R3

3AXD10000299801.xls

Fuses

gG fuses

Type ACS380-04xx	Input current	Min. short-circuit current	Nominal current	I^2t	Voltage rating	ABB type	IEC 60269 size
	A	A	A	A^2s	V		
1-phase U_N = 200…240 V							
02A4-1	5.0	80	10	380	500	OFAF00H10	000
03A7-1	7.8	80	10	380	500	OFAF00H10	000
04A8-1	10.1	128	16	720	500	OFAF00H16	000
06A9-1	14.5	200	20	1500	500	OFAF00H20	000
07A8-1	16.4	200	25	2500	500	OFAF00H25	000
09A8-1	20.6	256	32	2500	500	OFAF00H32	000
12A2-1	25.6	320	35	7000	500	OFAF00H35	000
3-phase U_N = 380…480 V							
01A8-4	2.9	32	4	55	500	OFAF00H4	000
02A6-4	4.2	48	6	110	500	OFAF00H6	000
03A3-4	5.3	48	6	110	500	OFAF00H6	000
04A0-4	6.4	80	10	360	500	OFAF00H10	000
05A6-4	9.0	80	10	360	500	OFAF00H10	000
07A2-4	11.5	128	16	740	500	OFAF00H16	000
09A4-4	15.0	128	16	740	500	OFAF00H16	000
12A6-4	20.2	200	25	2500	500	OFAF00H25	000
17A0-4	27.2	256	32	4500	500	OFAF00H32	000
25A0-4	40.0	320	40	7500	500	OFAF00H40	000

3AXD10000299801.xls

UL fuses

Type ACS380-04xx	Input current	Min. short-circuit current	Nominal current	Voltage rating	Bussmann type	Type
	A	A	A	V		
1-phase U_N = 200…240 V						
02A4-1	5.0	80	10	300	JJN/TJN10	UL class T
03A7-1	7.8	80	10	300	JJN/TJN10	UL class T
04A8-1	10.1	128	20	300	JJN/TJN20	UL class T
06A9-1	14.5	200	20	300	JJN/TJN20	UL class T
07A8-1	16.4	200	25	300	JJN/TJN25	UL class T
09A8-1	20.6	256	25	300	JJN/TJN25	UL class T
12A2-1	25.6	320	35	300	JJN/TJN35	UL class T
3-phase U_N = 380…480 V						
01A8-4	2.9	32	6	600	JJS/TJS6	UL class T
02A6-4	4.2	48	6	600	JJS/TJS6	UL class T
03A3-4	5.3	48	6	600	JJS/TJS6	UL class T
04A0-4	6.4	80	10	600	JJS/TJS10	UL class T
05A6-4	9.0	80	10	600	JJS/TJS10	UL class T
07A2-4	11.5	128	20	600	JJS/TJS20	UL class T
09A4-4	15.0	128	20	600	JJS/TJS20	UL class T
12A6-4	20.2	200	25	600	JJS/TJS25	UL class T
17A0-4	27.2	256	35	600	JJS/TJS35	UL class T
25A0-4	40.0	320	40	600	JJS/TJS40	UL class T

3AXD10000299801.xls

gR fuses

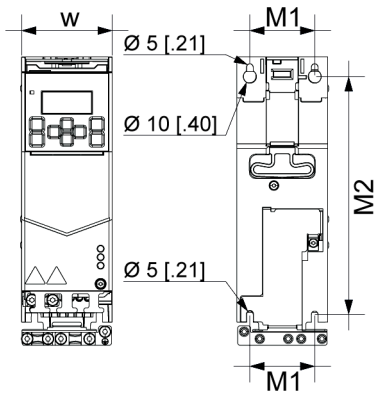
Type ACS380-04xx	Input current	Min. short-circuit current	Nominal current	I^2t	Voltage rating	Bussmann type	IEC 60269 size
	A	A	A	A^2s	V		
1-phase U_N = 200…240 V							
02A4-1	5.0	80	32	275	690	170M2695	00
03A7-1	7.8	80	32	275	690	170M2695	00
04A8-1	10.1	128	40	490	690	170M2696	00
06A9-1	14.5	200	50	1000	690	170M2697	00
07A8-1	16.4	200	63	1800	690	170M2698	00
09A8-1	20.6	256	63	1800	690	170M2698	00
12A2-1	25.6	320	63	1800	690	170M2698	00
3-phase U_N = 380…480 V							
01A8-4	2.9	32	25	125	690	170M2694	00
02A6-4	4.2	48	25	125	690	170M2694	00
03A3-4	5.3	48	25	125	690	170M2694	00
04A0-4	6.4	80	32	275	690	170M2695	00
05A6-4	9.0	80	32	275	690	170M2695	00
07A2-4	11.5	128	40	490	690	170M2696	00
09A4-4	15.0	128	40	490	690	170M2696	00
12A6-4	20.2	200	50	1000	690	170M2697	00
17A0-4	27.2	256	63	1800	690	170M2698	00
25A0-4	40.0	320	80	3600	690	170M2699	00

3AXD10000299801.xls

Dimensions and weights

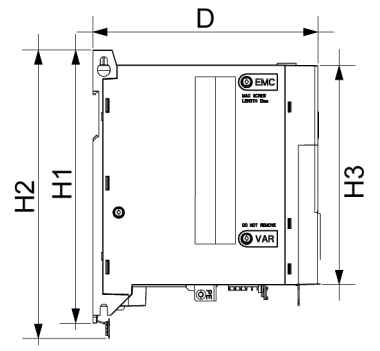
Frame size	Dimensions and weights															
	H1		H2		H3		W		D		M1		M2		Weight	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	kg	lb
R0	205	8.07	220	8.66	170	6.69	70	2.76	174	6.85	50	1.97	191	7.52	1.4	3.1
R1	205	8.07	220	8.66	170	6.69	70	2.76	174	6.85	50	1.97	191	7.52	1.6	3.5
R2	205	8.07	220	8.66	170	6.69	95	3.74	174	6.85	75	2.95	191	7.52	1.9	4.2
R3	205	8.07	220	8.66	170	6.69	169	6.65	174	6.85	TBC	TBC	191	7.52	TBC	TBC

3AXD10000299801.xls



Symbols

H1	Height back
H2	Height back
H3	Height front
W	Width
D	Depth
M1	Mounting hole distance 1
M2	Mounting hole distance 2



Free space requirements

Frame size	Free space required					
	Above		Below		Sides	
	mm	in	mm	in	mm	in
R0	75	2.95	75	2.95	0	0
R1	75	2.95	75	2.95	0	0
R2	75	2.95	75	2.95	0	0
R3	75	2.95	75	2.95	0	0

3AXD10000299801.xls

Ambient conditions

	Operation installed for stationary use	**Storage** in the protective package	**Transportation** in the protective package
Installation site altitude	0 to 2000 m above sea level (with derating above 1000 m) For installation above 2000 m, contact ABB.	-	-
Air temperature	-10...+50 °C (14...122 °F). Up to +60 °C with derating (except R0). No frost allowed.	-40...+70 °C (-40...158 °F)	-40...+70 °C (-40...158 °F)
Relative humidity	Up to 95% without condensation		
Contamination levels (IEC 60721-3-3)	Class 3C2	Class 1C2	Class 2C2
	Class 3S2	Class 1S2	Class 2S2
Sinusoidal vibration (IEC 60721-3-3)	Class 3M4	-	-
Shock (IEC 60068-2-27, ISTA 1A)	Not allowed	According to ISTA 1A. Max. 100 m/s2 (330 ft/s2), 11 ms.	According to ISTA 1A. Max. 100 m/s2 (330 ft/s2), 11 ms.
Free fall	Not allowed	76 cm (30 in)	76 cm (30 in)

Certifications

CE	CE marking
cULus LISTED	UL marking
	Pending
EAC	Pending
TÜV NORD GS	Pending

Related documents

Document	Code (English)
ACS380 User interface guide	*3AXD50000022224 [English]*
ACS380 Hardware manual	*3AXD50000029274 [English]*
ACS380 Firmware manual	*3AXD50000029275 [English]*

Online list of the manuals applicable to this product:

3AXD50000018553 Rev B EN 2016-04-05