

ACS580/ACH580/ACQ580-PDR (0.75 to 250 kW)

Quick installation guide



Related Manuals

About this document



3AXD50001285401A
Rev A EN 2026-01-28
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3AXD50001285401A

Safety instructions

These safety messages help prevent personal injury and damage to the equipment. The hazard levels comply with standard ANSI Z536.6.

WARNING Obey these instructions. If you ignore them, injury or death, or damage to equipment can occur.

- If you are not a qualified electrician, do not do electrical installation work.
- Do not work on the drive, motor cable or motor when the main power is applied. If the drive is already connected to the input power, wait for five minutes after disconnecting the input power.
- Do not work on the control cables when power is applied to the drive or to the external control circuits.
- Use the lifting eyes of the drive when you lift the drive. Do not tilt the drive. The drive is heavy and its center of gravity is high. An overturning drive can cause physical injury.

Unpack the delivery

Keep the drive in its package until you install it. After unpacking, protect the drive from dust, debris and moisture.

Make sure that all items are present and that there are no signs of damage:

- drive
- installation accessories (mounting template, cable clamps, screws, etc.)
- safety instructions
- multilingual warning sticker sheet (residual voltage warning)
- quick installation guide.

Select the cables

Select the cables as per the local regulations.

- Input power cables:** ABB recommends to use symmetrical shielded cable (VFD cable) for the best EMC performance.
- Motor cable:** Use symmetrical shielded cable (VFD cable) for the best EMC performance. Symmetrical shielded cable also reduces bearing currents, wear, and stress on motor insulation.
- Power cable types:** For IEC installations, use copper or aluminum cables (if permitted).

Examine the installation site

The ACx580-PDR is a package drive (PDR) and it comes with IP21/IP55 protection.

- IP21 drives are standard packaged drive modules.
- IP55 drives are packaged drive modules with option code +B056.

Examine the site where you install the drive. Make sure that:

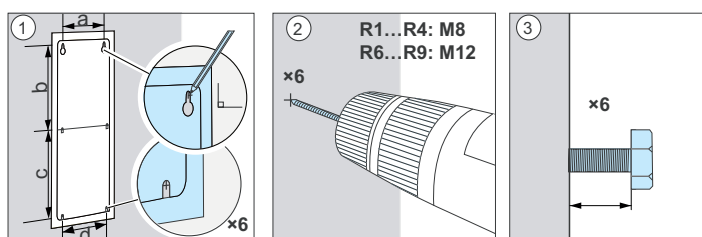
- the installation site is sufficiently ventilated and hot air does not recirculate.
- there is sufficient free space above and below the drive for cooling. Refer [Free space requirements](#).
- the ambient conditions are suitable. Refer [Ambient conditions](#).
- the mounting surface is non-flammable and can hold the weight of the drive. Refer [Dimensions and weights](#).
- materials near the drive are non-flammable.

Install the drive

You can mount the drive on the wall with suitable screws.

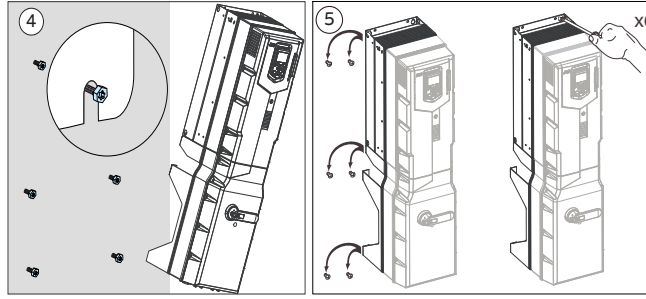
- Install frames R1 to R4 and R6 to R9 in a vertical orientation.
- Make sure that the drive is not installed upside down.
- Multiple drives can be installed side by side.

To mount the drive on the wall, do these steps:



WARNING Use the lifting eyes of the drive when you lift the drive. Do not tilt the drive. The drive is heavy and its center of gravity is high. An overturning drive can cause physical injury.

- Make marks onto the surface for the mounting holes. Use the mounting template that is delivered with the drive.
- Drill the holes for the mounting screws. If necessary, install suitable plugs and anchors into the holes.
- Install the mounting screws into the holes. Refer dimensions and weights for the maximum screw diameter. Leave a gap between the screw head and the installation surface.
- Position the drive onto the lower bolts on the wall to support the weight of the drive. Rotate the drive to the wall and place the drive over the upper bolts.



- Tighten the screws to fix the drive to the mounting surface.

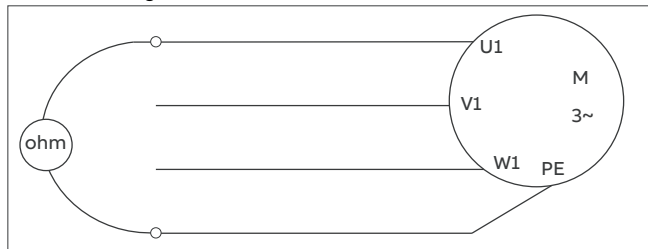
Measure the insulation resistance

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.

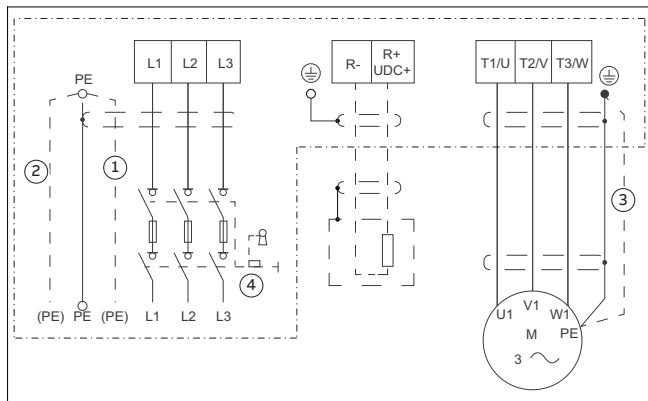
Motor and motor cable:

- 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.
- Use a voltage of 1000 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 MΩ (at 25 °C/77 °F). For the insulation resistance of other motors, refer 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.



Connect the power cables

Connection diagram (shielded cables)



- Two protective earth (ground) conductors. Drive safety standard IEC/ EN 61800-5-1 requires two PE conductors if the cross-sectional area of the PE conductor is less than 10 mm² Cu (Copper) or 16 mm² Al (Aluminum). For example, you can use the cable shield in addition to the fourth conductor.
- Use a separate grounding cable or a cable with a separate PE conductor for the line side, if the conductivity of the fourth conductor or shield does not agree with the requirements of the PE conductor.
- Use a separate grounding cable for the motor side if the conductivity of the shield is not sufficient or if there is no symmetrically constructed PE conductor in the cable.
- Switch-disconnector and fuses. Refer section Selecting the supply disconnecting device in the hardware manual.



WARNING Do not install the drive with the internal EMC filter and VAR varistor connected on an IT system (an ungrounded power system or a high-resistance-grounded [over 30 Ω] power system).

Connection procedure (shielded cables)

If you do wiring in conduits, refer drive hardware manual for more information.

- Attach the residual voltage warning sticker to the drive.
- Install the grounding plate.
- Strip the motor cable.
- Ground the motor cable shield under the grounding clamp for 360° grounding.
- Twist the motor cable shield into a bundle and mark it with yellow-green insulation tape. Install a cable lug and connect the shield to the grounding terminal.
- Connect the phase conductors of the motor cable to terminals T1/U, T2/V and T3/W.
- Frames R1...R4:** If you use a brake resistor, connect the resistor cable to the terminals R- and UDC+. Use a shielded cable and ground the shield under the grounding clamp for 360° grounding.
- Frames R1...R4:** Make sure that the R- and UDC+ terminal screws are tightened. Tighten them also when no cables are connected.
- Strip the input power cable.
- If the input power cable has a shield, twist the shield into a bundle, mark it and connect it to the grounding terminal.
- Connect the PE conductor of the input power cable to the grounding terminal. If necessary, use a second PE conductor.
- 3-phase drives:** Connect the phase conductors of the input power cable to the terminals L1, L2 and L3.
- Mechanically attach the cables on the outside of the drive.

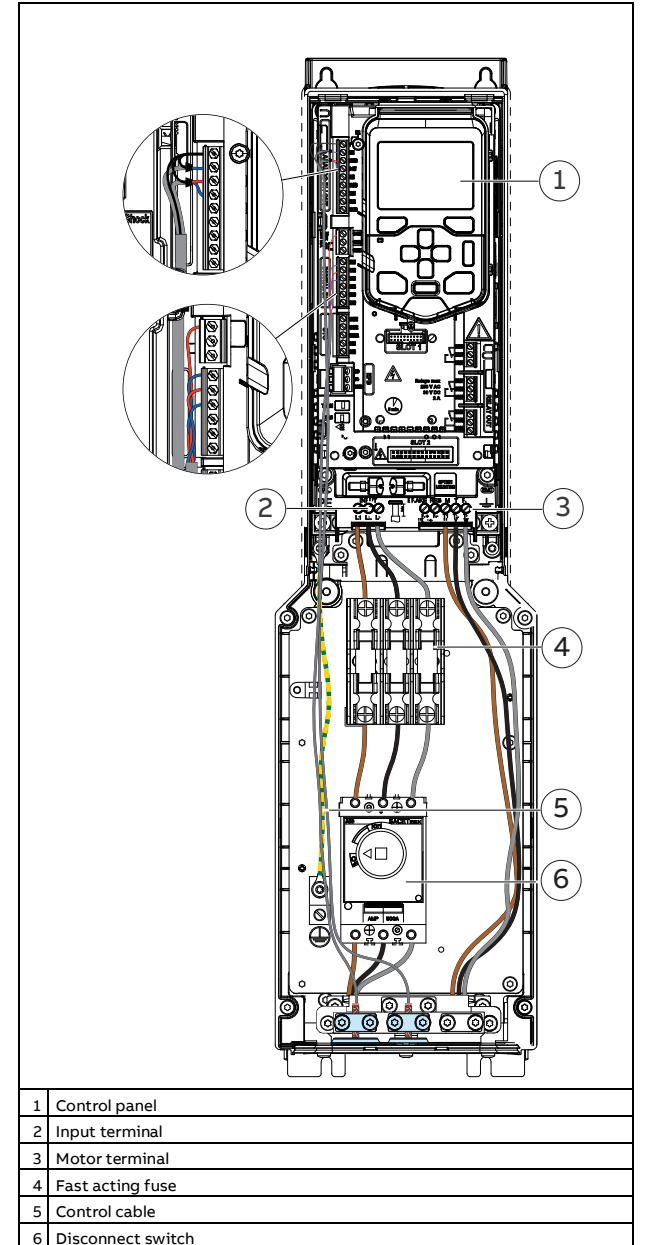
Connect the control cables

Do the control cable connections according to the default control connection given in the ACS580-01 hardware manuals. Keep the signal wire pairs twisted as near to the terminals as possible to prevent inductive coupling. The tightening torque for the terminal connection is 0.5...0.6 N·m (4.4 ...5.3 lbf·in).

- Remove the front cover.
- Install the grounding plate.
- Strip a part of the outer shield of the control cable for grounding the shield.
- Use a 360° grounding clamp to connect the outer shield to the grounding plate.
- Strip the control cable conductors. For stranded (multi-wire) conductors, install ferrules at the bare conductor ends.
- Connect the conductors to the correct control terminals. Insert the conductor into a push-in terminal. To release, push the open/close button all the way down firmly with a flathead screwdriver.
- Connect the shields of the twisted pairs and grounding wires to the screen terminal.
- Mechanically attach the control cables on the outside of the drive.

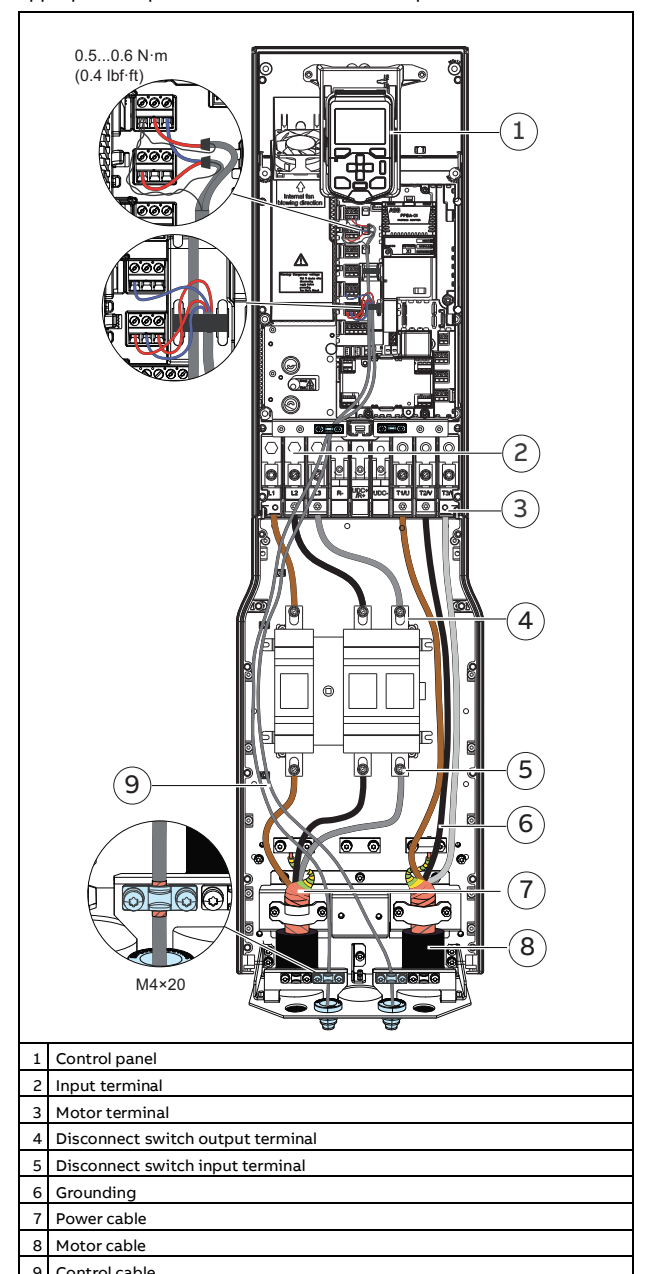
Frames R1...R4

The drive is configured for wiring access from the bottom only. The figure shows the layout and wiring connection points for frame R4. Maintain appropriate separation of control cables and power cables.



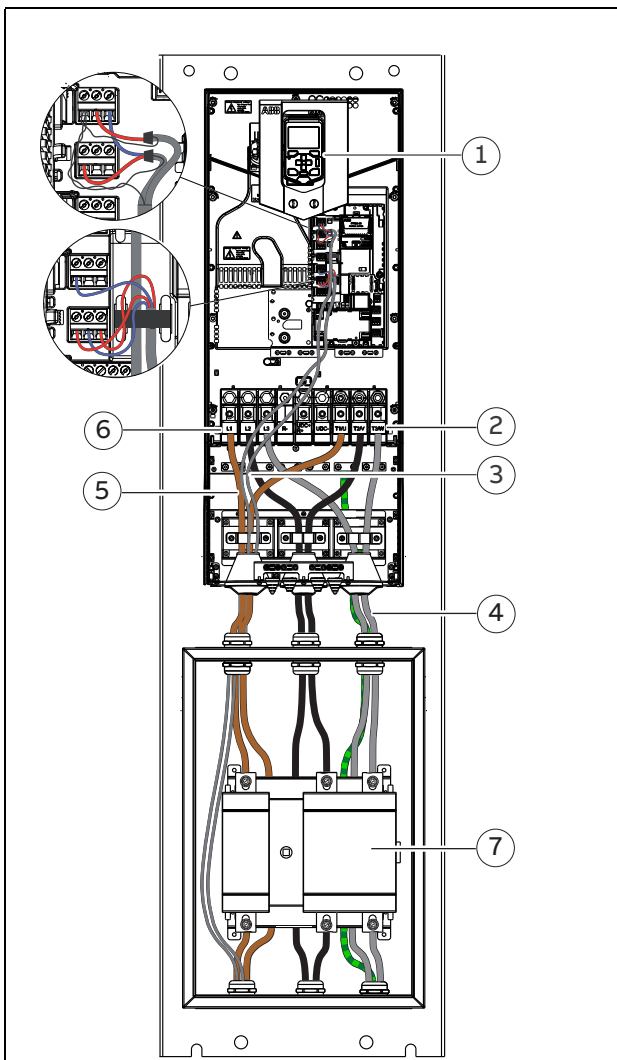
Frames R6...R8

The drive is configured for wiring access from the bottom only. The figure shows the layout and wiring connection points for frame R6. Maintain appropriate separation of control cables and power cables.



Frame R9

The drive is configured for wiring access from the bottom only. The figure shows the layout and wiring connection points for frame R9. Maintain appropriate separation of control cables and power cables.



1	Control panel
2	Motor terminal
3	Control cable
4	Motor cable
5	Auxiliary power supply cable
6	Input terminal
7	Disconnecter switch

Start up the drive

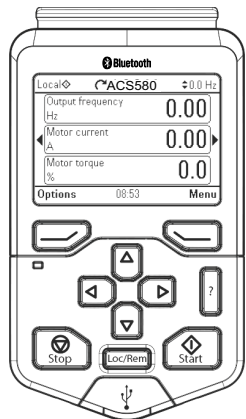
For information on the control panel user interface, refer *ACS-AP-x Assistant control panel user's manual* (3AU0000085685 [EN]).

The control panel has softkeys below the display to access the corresponding commands, and arrow keys to navigate the menu and change parameter values. Push the "?" button to open the help function.

First start-up:

Make sure that you have the motor data (from the name plate) available.

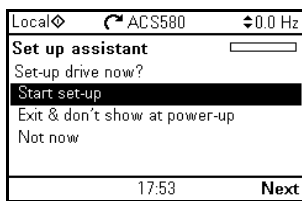
- Set the main power to On.



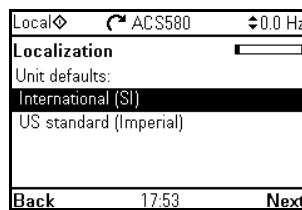
- Select the user interface language with the arrow keys and set it with the right softkey (OK).



- Select **Start set-up** and push the right softkey (Next).



- Select the localization and push the right softkey (Next).



To set up fieldbus communications for a fieldbus adapter, refer applicable fieldbus adapter manual and to the respective firmware manuals.

For more information on program features and parameters, refer to the respective drive firmware manuals.

Ambient conditions

Requirement	During operation (installed for stationary use)
Installation altitude	400 V units: 0...4000 m (0...13123 ft) above sea level (with derating above 1000 m [3281 ft]) ¹⁾
Air temperature	-15...+50 °C (5...122 °F). Above 50 °C (122 °F) derating is required. No frost allowed.
Relative humidity	5%... 95% without condensation
Contamination levels (IEC 60721-3-x)	No conductive dust allowed IEC 60721-3-3: 2019 and ISO9223:ANSI-ISA 71.04 Classification of environmental conditions - Part 3-3: Classification of groups of environmental parameters and their severities - Stationary use of weather protected locations
Shock (IEC 60068-2-27, IATA 1A)	Not allowed
Free fall	Not allowed

¹⁾ Altitude derating: Up to 4000 m (13123 ft) is possible for 400 V units, if the maximum switching voltage for the integrated Relay Output 1 is 30 V at 4000 m (13123 ft) (e.g. do not connect 250 V to Relay Output 1). Up to 250 V is permitted up to 2000 m (6562 ft).
For a three-phase 400 V drive at 4000 m (13123 ft) altitude, only the following power systems are permitted: TN-S, TN-C, TN-CS, TT (not corner derating).

Ratings

For detailed technical information, refer to *ACS580/ACH580/ACQ580-PDR (0.75 to 250 kW) Supplement* (3AXD50001285388 [EN]).

IEC, $U_N = 400 V$

ACx580-PDR	Frame	Input rating	Max. current	Output ratings							
				Nominal use		Light-duty use		Heavy-duty use			
				I_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}		
		A	A	A	kW	A	kW	A	kW		
02A7-4	R1	2.6	3.2	2.6	0.75	2.5	0.75	1.8	0.55		
03A4-4	R1	3.3	4.7	3.3	1.1	3.1	1.1	2.6	0.75		
04A1-4	R1	4.0	5.9	4.0	1.5	3.8	1.5	3.3	1.1		
05A7-4	R1	5.6	7.2	5.6	2.2	5.3	2.2	4.0	1.5		
07A3-4	R1	7.2	10.1	7.2	3.0	6.8	3.0	5.6	2.2		
09A5-4	R1	9.4	13.0	9.4	4.0	8.9	4.0	7.2	3.0		
12A7-4	R1	12.6	15.3	12.6	5.5	12.0	5.5	9.4	4.0		
018A-4	R2	17.0	22.7	17.0	7.5	16.2	7.5	12.6	5.5		
026A-4	R2	25.0	30.6	25.0	11.0	23.8	11.0	17.0	7.5		
033A-4	R3	32.0	44.3	32.0	15.0	30.4	15.0	24.6	11.0		
039A-4	R3	38.0	56.9	38.0	18.5	36.1	18.5	31.6	15.0		
046A-4	R3	45.0	67.9	45.0	22.0	42.8	22.0	37.7	18.5		
062A-4	R4	62	81	62	30	58	30	45	22		
073A-4	R4	73	110	73	37	68	37	61	30		
089A-4	R4	89	130	89	45	83	45	72	37		
106A-4	R6	106	157	106	55	100	55	87	45		
145A-4	R6	145	178	145	75	138	75	105	55		
169A-4	R7	169	247	169	90	161	90	145	75		
206A-4	R7	206	287	206	110	196	110	169	90		
246A-4	R8	246	350	246	132	234	132	206	110		
293A-4	R8	293	418	293	160	278	160	246	132		
363A-4	R9	363	498	363	200	345	200	293	160		
430A-4	R9	430	545	430	250	400	250	363	200		
490A-4	R9	450	600	490	250	480	250	385	200		

Fuses

Refer to *ACS580/ACH580/ACQ580-PDR (0.75 to 250 kW) Supplement* (3AXD50001285388 [EN]).

Terminal data for power cables

ACx580-PDR	Frame	Input terminals L1, L2, L3			
		Min. wire size (solid/stranded)	Max. wire size (solid/stranded)	Tightening torque	
				N-m	lbf-in
02A7-4	R1	0.75	10	2.4	21.24
03A4-4	R1	0.75	10	2.4	21.24
04A1-4	R1	0.75	10	2.4	21.24
05A7-4	R1	0.75	10	2.4	21.24
07A3-4	R1	0.75	10	2.4	21.24
09A5-4	R1	0.75	10	2.4	21.24
12A7-4	R1	0.75	10	2.4	21.24
018A-4	R2	0.75	10	2.4	21.24
026A-4	R2	0.75	10	2.4	21.24
033A-4	R3	1.5	35	2	17.70
039A-4	R3	1.5	35	2	17.70
046A-4	R3	1.5	35	2	17.70
062A-4	R4	10	70	6	53.10
073A-4	R4	10	70	6	53.10
089A-4	R4	10	70	6	53.10
106A-4	R6	10	70	6	53.10
145A-4	R6	10	70	6	53.10
169A-4	R7	25	185	20	177.01
206A-4	R7	25	185	20	177.01
246A-4	R8	25	185	20	177.01
293A-4	R8	25	185	20	177.01
363A-4	R9	95	300	45	398.28
430A-4	R9	95	300	45	398.28
490A-4	R9	95	300	45	398.28

ACx580-PDR	Frame	Output terminals T1/U, T2/V, T3/W			Grounding terminals	
		Min. wire size (solid/stranded)	Max. wire size (solid/stranded)	Torque	Max. wire size	Torque
					mm ²	mm ²
02A7-4	R1	0.2/0.25	6/4	2.4	16/16	1.5
03A4-4	R1	0.2/0.25	6/4	2.4	16/16	1.5
04A1-4	R1	0.2/0.25	6/4	2.4	16/16	1.5
05A7-4	R1	0.2/0.25	6/4	2.4	16/16	1.5
07A3-4	R1	0.2/0.25	6/4	2.4	16/16	1.5
09A5-4	R1	0.2/0.25	6/4	2.4	16/16	1.5
12A7-4	R1	0.2/0.25	6/4	2.4	16/16	1.5
018A-4	R2	0.5/0.5	16/16	2.4	16/16	1.5
026A-4	R2	0.5/0.5	16/16	2.4	16/16	1.5
033A-4	R3	0.5/0.5	35/25	2	35/35	1.5
039A-4	R3	0.5/0.5	35/25	2	35/35	1.5
046A-4	R3	0.5/0.5	35/25	2	35/35	1.5
062A-4	R4	0.5/0.5	50	6	35/35	2.9
073A-4	R4	0.5/0.5	50	6	35/35	2.9
089A-4	R4	0.5/0.5	50	6	35/35	2.9
106A-4	R6	25	150	6	185	9.8
145A-4	R6	25	150	6	185	9.8
169A-4	R7	95	240	20	185	9.8
206A-4	R7	95	240	20	185	9.8
246A-4	R8	2×50	2×150	20	2×185	9.8
293A-4	R8	2×50	2×150	20	2×185	9.8
363A-4	R9	2×95	2×240	45	2×185	9.8
430A-4	R9	2×95	2×240	45	2×185	9.8
490A-4	R9	2×95	2×240	45	2×185	9.8

Frame	g ¹⁾	R+, R-, UDC+, UDC- terminals				Per cable type
		Min. wire size (solid/stranded)	Max. wire size (solid/stranded)	T (wire size)		
				Screw/Bolt	N-m	
R1	23	0.2/0.25	6/4	2)	1.0	1
R2	23	0.5/0.5	16/16	2)	1.5	1
R3	23	0.5/0.5	35/25	2)	3.5	1
R4	39	0.5/0.5	50	2)	4.0	1
R4	39	1.5/1.5	70	2)	5.5	1
R6	39	6	70	M5	15	1
R6	45	25	150	M8	30	1
R7	54	95	240	M10	30	1
R8	45	2×50	2×150	M10	40	2
R9	45	2×95	2×240	M12	70	2

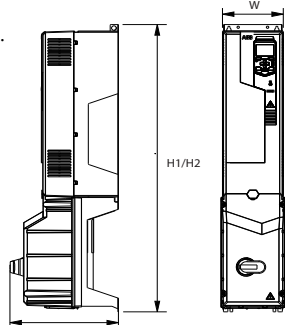
¹⁾ Maximum cable diameter accepted

²⁾ R1: Combo: Slot 4 mm and PH1; R2: Combo: Slot 4.5 mm and PH2; R3 and R4: PH2

Dimensions and weights

Dimensions are in mm and weights are in kg. Height H1 is for IP21 and height H2 is for IP55.

Frame	H1	H2	W	D	Weight
R1	624	624	170	321	8.2
R2	723	723	161	320	10
R3	885	885	213	335	17.7
R4	1031	1031	213	362	39
R6	1080	1080	283	410	55
R7	1514	1514	384	411	68
R8	1626	1626	380	492	86
R9	1805	2005	540	490	116



Free space requirements

Frame	Above		Below	
	mm	in	mm	in
R1...R4, R6...R9	200	7.87	300	11.81

Certifications

The applicable certifications are shown on the product type label.



Declaration of conformity

ABB

EU Declaration of Conformity

We, Manufacturer: ABB India Limited
Address: Plot no. 5 & 6, Peenya Industrial Area, Peenya 2nd Stage, Bangalore, Karnataka, India
Phone: +91 80 22949150
declare under our sole responsibility that the following frequency converters:
Models ACS580-PDR, ACH580-PDR and ACQ580-PDR, followed by -02A7, -03A4, -04A1, -05A7, -07A3, -09A5, -12A7, -018A, -026A, -033A, -039A, -046A, -062A, -073A, -089A, -106A, -145A, -169A, -206A, -246A, -293A, -363A, -430A, -490A, followed by -4, may be followed by any combination of -Rxxx, -Cxxx, -Dxxx, -Exxx, -Fxxx, -Gxxx, -Hxxx, -Ixxx, -Jxxx, -Kxxx, -Lxxx, -Mxxx, -Nxxx, -Oxxx, -Pxxx, -Qxxx, -Rxxx, where x can be any number 0-9
are in conformity with the relevant requirements of Low Voltage Directive 2014/26/EU, EMC Directive 2014/53/EU, RoHS Directive 2011/65/EU and Commission Delegated Directive (EU) 2015/963 amending Annex II to Directive 2011/65/EU and Ecodesign Directive 2009/125/EC and its implementation regulation 2019/1781/EU, provided that the equipment is selected, installed and used according to given instructions.
The following harmonized standards have been applied:
Low Voltage Directive 2014/26/EU
EN 61800-5-1:2007+A1:2017+A11:2021 Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
EMC Directive 2014/53/EU
EN 61800-3:2004+A1:2012 Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods
RoHS Directive 2011/65/EU
EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
Ecodesign Directive 2009/125/EC
EN 61800-9-2:2011 Eco-design for power drive systems, motor starters, power electronics and their driven applications - Energy efficiency indicators for power drive systems and motor starters
Bangalore, September 4, 2025
Signed for and on behalf of
Madhusudan A.R. Local Division Manager, ABB India Limited
Laxmikantha Shenoy Head Product Engineering, ABB India Limited
3AXD1000289240 Rev. A

ABB

EU Declaration of Conformity

Electrical Equipment (Safety) Regulations 2016 and EMC Regulations 2016

We, Manufacturer: ABB India Limited
Address: Plot no. 5 & 6, Peenya Industrial Area, Peenya 2nd Stage, Bangalore, Karnataka, India
Phone: +91 80 22949150
declare under our sole responsibility that the following frequency converters:
Models ACS580-PDR, ACH580-PDR and ACQ580-PDR, followed by -02A7, -03A4, -04A1, -05A7, -07A3, -09A5, -12A7, -018A, -026A, -033A, -039A, -046A, -062A, -073A, -089A, -106A, -145A, -169A, -206A, -246A, -293A, -363A, -430A, -490A, followed by -4, may be followed by any combination of -Rxxx, -Cxxx, -Dxxx, -Exxx, -Fxxx, -Gxxx, -Hxxx, -Ixxx, -Jxxx, -Kxxx, -Lxxx, -Mxxx, -Nxxx, -Oxxx, -Pxxx, -Qxxx, -Rxxx, where x can be any number 0-9
are in conformity with the relevant requirements of Electrical Equipment (Safety) Regulations 2016 and EMC Regulations 2016, provided that the equipment is selected, installed and used according to given instructions.
The following designated standards have been applied:
EN 61800-5-1:2007 Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
EN 61800-3:2004 + A1:2012 Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods
The following other standards have been applied:
EN IEC 61800-3:2018 Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods
Bangalore, September 4, 2025
Signed for and on behalf of
Madhusudan A.R. Local Division Manager, ABB India Limited
Laxmikantha Shenoy Head Product Engineering, ABB India Limited
3AXD1000289244 Rev. A

ABB

EU Declaration of Conformity