

# User's manual

## ACS180 democase



## List of related manuals

<b><u>ACS180 democase manuals and guides</u></b>	<b><u>Code (English)</u></b>
ACS180 democase user's manual	3AXD10001804103

<b><u>Drive manuals and guides</u></b>	<b><u>Code (English)</u></b>
ACS180 quick installation and start-up guide	3AXD50000510344
ACS180 user interface guide	3AXD50000606696
ACS180 Drives hardware manual	3AXD50000467945
ACS180 Firmware manual	3AXD50000467860

<b><u>Option manuals and guides</u></b>	<b><u>Code (English)</u></b>
ACS-AP-x Assistant control panel user's manual	3AUA0000085685

<b><u>Tool and maintenance manuals and guides</u></b>	<b><u>Code (English)</u></b>
Drive composer PC tool user's manual	3AUA0000094606
Adaptive programming application guide	3AXD50000028574

You can find manuals and other product documents in PDF format on the Internet. Go to [www.abb.com/drives](http://www.abb.com/drives) and select Document Library. You can browse the library or enter selection criteria, for example a document code, in the search field.

## Contents

Safety instructions .....	4
General safety instructions .....	4
Introduction .....	5
What this chapter contains .....	5
Purpose of the democase .....	5
Target audience .....	5
Delivery content .....	6
Layout and default I/O functions .....	7
Basic start-up .....	9
Commissioning .....	11
Start-up assistant .....	11
Technical data .....	12
Dimensions of the democase with trolley .....	12
Drive type code .....	12
Motor data .....	12
AC input (supply) connection .....	12
Degree of protection .....	13
Ambient conditions .....	13
Declaration of Conformity .....	14
CE marking, UKCA marking .....	14
Troubleshooting and maintenance .....	17
Internal connections .....	17
Change of fuse .....	18
Further information .....	19
Product and service inquiries .....	19
Product training .....	19
Providing feedback on ABB Drives manuals .....	19

## Safety instructions

### General safety instructions

These safety instructions are intended for all personnel who work on the drive. For complete safety instructions, see the drive manuals.

Ignoring these instructions can cause physical injury or death, or damage the equipment. All electrical installations and maintenance work on the drive should be carried out by qualified electricians only.

**WARNING!**

- Make sure that the drive and all adjoining equipment are properly earthed.
- Do not attempt any maintenance on powered drive.
- After switching off the mains, always allow the intermediate circuit capacitors 5 minutes to discharge before doing any maintenance work on frequency converter, the motor or the motor cable.
- It is good practice to check (with a voltage indicating instrument) that the drive is in fact discharged before beginning work.

**WARNING!**

If the demo unit is operated within the transportation enclosure, please note that the motors and drives have less air available for cooling, which may result in overheating.

**WARNING!**

The democase is intended for demo purposes only. Using democase as a part of any process or application other than the intended demo use is strictly prohibited. Never remove the cover of the motor shaft or connect a load to it.

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## **Introduction**

### **What this chapter contains**

This manual gives basic information about ACS180 democase. It describes the purpose of the democase and intended audience.

### **Purpose of the democase**

Democase is based on ACS180-04S-02A4-1 drive and provides a possibility to have hands-on trainings and demonstrations of the ACS180-04S functionality.

### **Target audience**

The ACS180 democase is intended for ABB internal personnel and dedicated partners, people who design, commission, operate or sell the drive or drive system.

## Delivery content

ACS180 democase contains:

1. Cables for ACS-AP-W panel connection
  - Cable for panel to PC-connection (USB A / Mini-B connectors)
  - Cable for panel to drive connection (RJ-45 / RJ-45 connectors)
2. PC to drive connection (Cable type: BCBL-01, USB A / RJ-45 connectors)
3. Mains cord
4. ACS-AP-W Bluetooth panel
5. ACS180 democase user's manual

1



2



3



4



5



## Layout and default I/O functions





24 VDC out  
External

Input voltage  
switch  
(115V/230V)

Mains switch

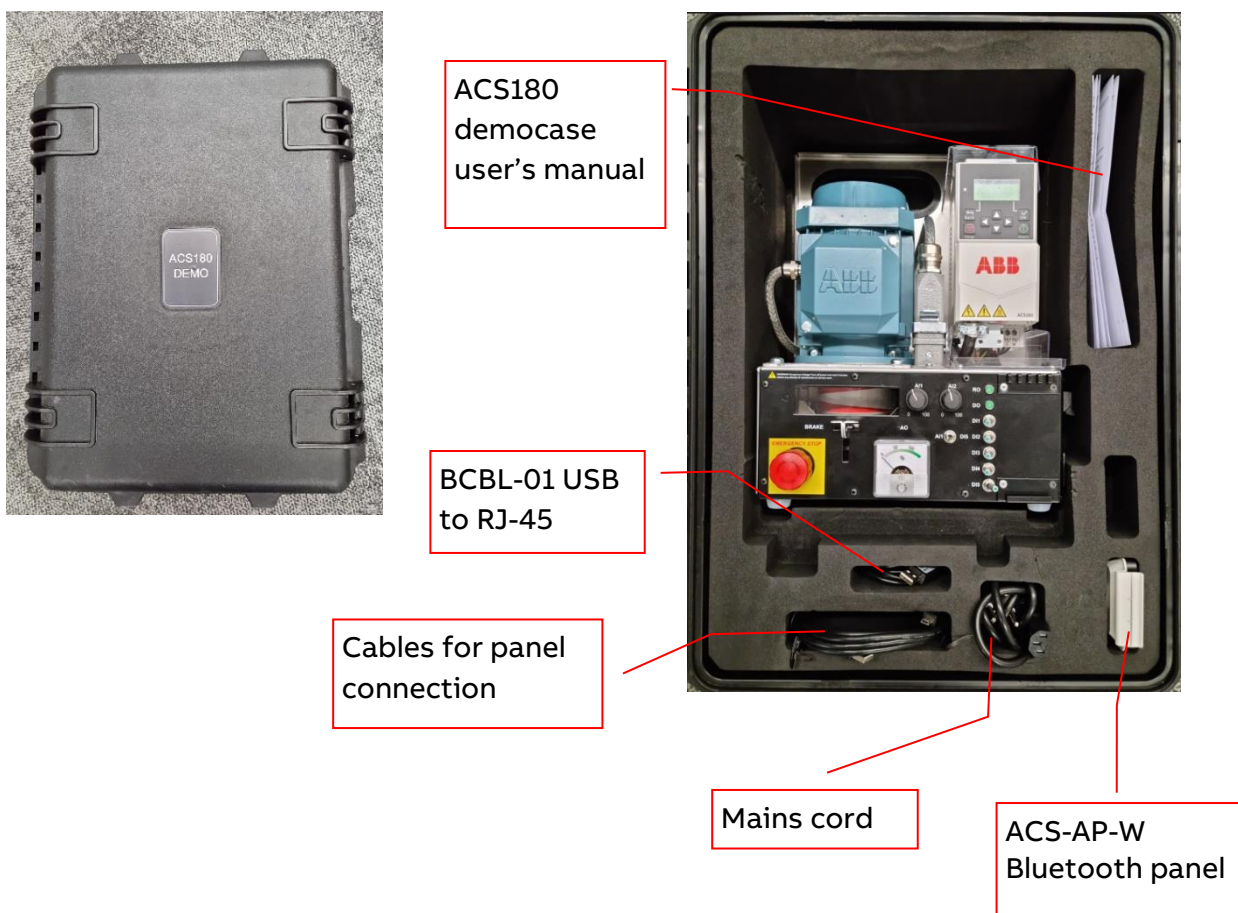
Fuse terminal

Mains cord  
connection

## Basic start-up

1. Lay the democase on its back (so that the front cover is pointing up).

The democase is opened by releasing two plastic hatches on the side of the case.



Pull the democase out of the case using the handle hole (on the upper part of the demo.)

**Warning!** The complete demo (with trolley) weighs approximately 17 kg. Use of proper lifting technique with a straight back is advised.

2. Take out the mains cord and plug it in the mains cord connection marked: Main supply.



Check that the Input voltage switch (115V/230V) is set according to the supply voltage. For more information check “AC input (supply) connection” in the Technical data section. Switch on the demo using the mains switch.

**Note:** The “Emergency Stop” button and circuitry in the democase is not a safety function for personnel protection. It exists only for demonstration purposes (safe torque off function)

## Commissioning

### Start-up assistant

To commission the drive, accomplish the Start-up assistant. Motor nominal values can be seen from the type label of the motor, or in [Technical data](#) (Motor data) paragraph in this manual. The instructions for Start-up assistant can be found from *ACS180 quick installation and start-up guide* delivered with the democase, and from *ACS180 firmware manual* (paragraph 3. Start-up, ID run and use) .

### Notes for democase AI1/DI5 switch operation:

ACS180 drive control input AI1/DI5 can be configured (Par. 11.21) as Analog input 1 (AI1) or as Digital input 5 (DI5), default configuration is Analog input 1. Then also related democase selection switch (AI1/DI5) should be set in corresponding position. When using DI5 configuration, then source for frequency/speed reference needs to be checked (default source: "AI1 scaled").

	Par. 11.21: Analog input 1	Par. 11.21: Digital input 5
Selection AI1/DI5		
AI1	Analog input 1 (AI1) actual value (12.11) can be set by democase AI1 potentiometer (0...10 V)	Democase AI1 potentiometer has no influence on AI1 actual value (Par. 12.11=0 V)  Digital input 5 (DI5) status (Par. 10.01 bit 4) is not set according to democase DI5 switch, but democase AI1 potentiometer position will influence on DI5 status (Par. 10.01).
DI5	Democase AI1 potentiometer has no influence, but DI5 switch will influence on AI1 actual value (Par. 12.11) following way: - DI5 in left position (light off): AI1 actual value = 0 V - DI5 in right position (light on): AI1 actual value = 11 V - DI5 status in set "0" (Par. 10.01 bit 4=0 ) in both DI5 switch positions	Digital input 5 (DI5) status (Par. 10.01 bit 4) is set according to democase switch (DI5)

## Technical data

### Dimensions of the democase with trolley

Height: 565 mm  
 900 mm (trolley handle pulled up)  
 Width: 415 mm  
 Depth: 290 mm  
 Weight: 17 kg total, demo (without trolley) 10 kg

### Drive type code

ACS180-04S-02A4-1

### Motor data

Motor type: Two different types are in use, see below the data

- ABB / M3AA 056 B-4 (3GAA052312-BSF)
- ABB / M3AA 063 B-4 (3GAA062312-BSE)

ACS180 parameter	M3AA 056 B-4	M3AA 063 B-4
99.03 Motor type	Asynchronous motor	Asynchronous motor
99.04 Motor control mode	Scalar/Vector	Scalar/Vector
99.06 Motor nominal current	0.68 A	1.16 A
99.07 Motor nominal voltage	230 V	230 V
99.08 Motor nominal frequency	50 Hz	50 Hz
99.09 Motor nominal speed	1400 rpm	1370 rpm
99.10 Motor nominal power	0.09 kW	0.18 kW
99.11 Motor nominal cosphi	0.59	0.61

### AC input (supply) connection

U1 ~ 115VAC or 230VAC (L, N, PE)

The democase can be used with both 115V and 230V supply. It is important to check that the input voltage switch (115V/230V) is in the correct position for the supply, like if using 230V supply, then “230V” should be visible in the switch. If the switch is not set correctly, the fuse will be burned.

## **Degree of protection**

Drive: IP20

Motor: IP55

Complete democase: IP20

## **Ambient conditions**

The demo is designed for demonstration purposes and for indoor use only.

Ambient temperature:

- Transport: -40 to +70 °C
- Storage: -40 to +70 °C
- Operation: -10 to +40 °C, no frost allowed

Altitude:

- 0 to 2,000 m without an effect on demo operation

Relative humidity:

- 5 to 95%, no condensation allowed

For more detailed information, refer to the drive Hardware Manual.

## **Declaration of Conformity**

### **CE marking, UKCA marking**

A CE mark and UKCA mark is attached to the democase to indicate the compliance with the applicable European Union legislation, and with the applicable United Kingdom's legislation. ABB has issued declarations of conformity according to these requirements for the democase, printed in this manual's next pages.



## EU Declaration of Conformity

We

Manufacturer: ABB Oy

Address: Hiomotie 13, 00380 Helsinki, Finland.

Phone: +358 10 22 11

declare under our sole responsibility that the following product:

### ACS180 Democase

is in conformity with the relevant requirements of European Union Directives, which have been notified in this single declaration that consists of individual Declarations of conformity, provided that the equipment is selected, installed and used according to given instructions.

The harmonised standards and other standards, which have been applied, are specified on the individual Declarations of conformity for particular EU directive.

EU Directives		
Low Voltage Directive	2014/35/EU	LVD
EMC Directive	2014/30/EU	EMC
Machinery Directive	2006/42/EC	MD
RoHS Directive	2011/65/EU	RoHS

The following harmonized standards have been applied:

EN 61800-3:2004 + A1:2012	<i>Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods</i>
EN ISO 12100:2010	<i>Safety of machinery – General principles for design Risk assessment and risk reduction</i>
EN 60204-1:2018	<i>Safety of machinery – Electrical equipment of machines – Part 1: General requirements</i>
EN 50581:2012	<i>Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances</i>
EN 61800-5-1:2007- A1:2017+A11:2021	<i>Adjustable speed electrical power drive systems - Part 5-1: Safety requirements – Electrical, thermal and energy</i>
EN 63000:2018	<i>Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances</i>

Helsinki, 20 Dec 2022

Signed for and on behalf of:



Mika Vartiainen  
Local Division Manager, ABB Oy



Mikko Korpinen  
Product Unit Manager, ABB Oy



## UK Declaration of Conformity

We

Manufacturer: ABB Oy

Address: Hiomotie 13, 00380 Helsinki, Finland.

Phone: +358 10 22 11

declare under our sole responsibility that the following product:

### ACS180 Democase

is in conformity with the relevant requirements of UK legislation, which have been notified in this single declaration that consists of individual Declarations of conformity, provided that the equipment is selected, installed and used according to given instructions.

The designated standards and other standards, which have been applied, are specified on the individual Declarations of Conformity for particular UK legislation.

UK legislation		
Electrical Equipment (Safety) Regulations	2016	UK Safety
Electromagnetic Compatibility Regulations	2016	UK EMC
Supply of Machinery (Safety) Regulations	2008	UK Machinery
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations	2012	UK RoHS

The following harmonized standards have been applied:

BS EN 61800-3:2004 + A1:2012	<i>Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods</i>
BS EN ISO 12100:2010	<i>Safety of machinery – General principles for design Risk assessment and risk reduction</i>
BS EN 60204-1:2018	<i>Safety of machinery – Electrical equipment of machines – Part 1: General requirements</i>
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BS EN IEC 63000:2018	<i>Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances</i>

Helsinki, 20 Dec 2022

Signed for and on behalf of:



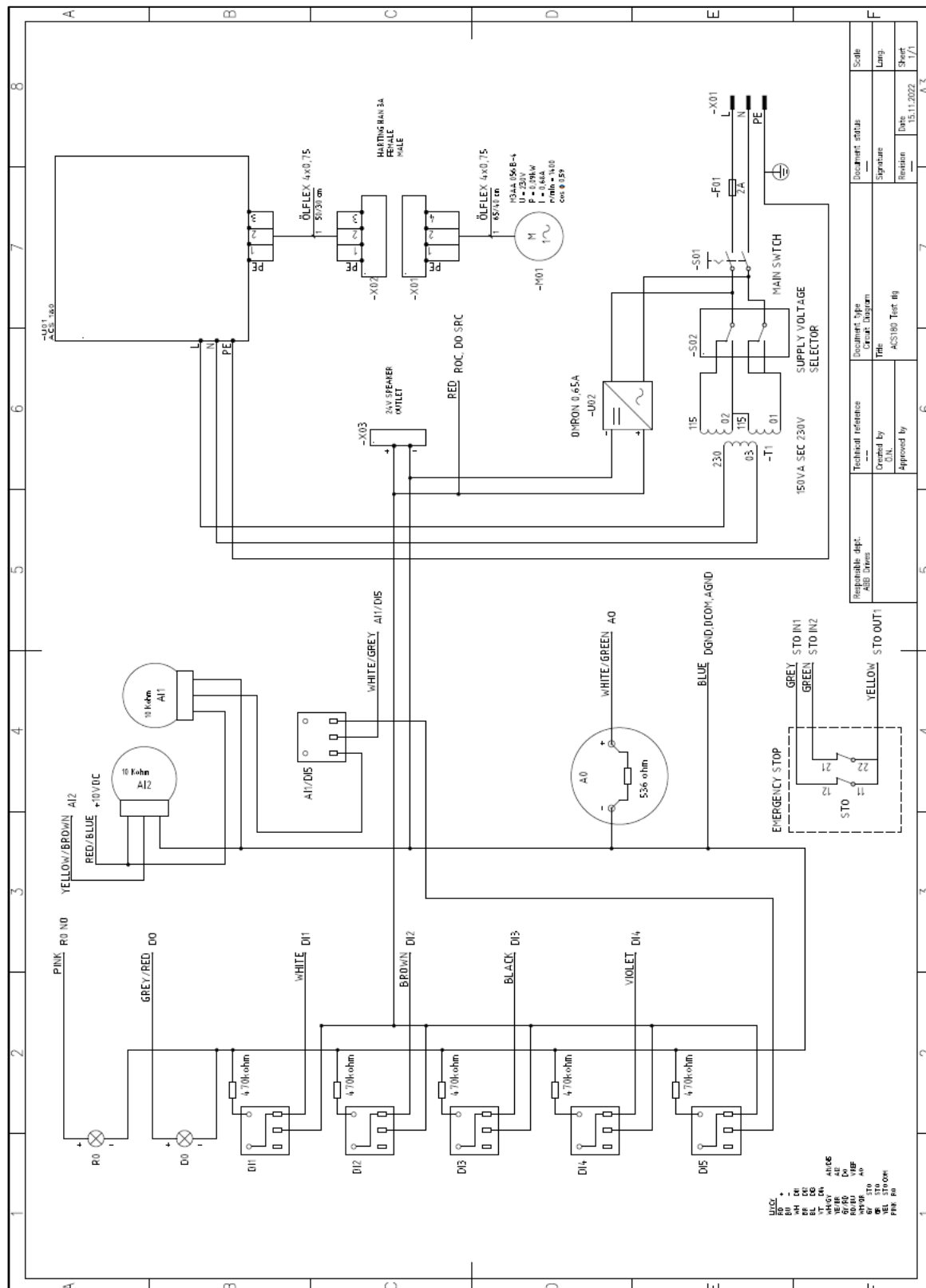
Mika Vartiainen  
Local Division Manager, ABB Oy



Mikko Korpinen  
Product Unit Manager, ABB Oy

# Troubleshooting and maintenance

## Internal connections



## Change of fuse



**WARNING!** Turn off the democase and disconnect the power cord before changing the fuse. Replace the fuse with the same type of fuse.

Changing the fuse does not require any tools. Open the fuse terminal by pressing together the pins on the top and bottom of the fuse terminal and pulling the terminal out. Pull out the old fuses and replace them with new fuses of the same type. Push the fuse terminal back in.

Correct fuse type is: T2AL250V (Slow, 2.0A, 250V glass tube fuse).  
There are two fuses of this type in the fuse terminal.

## **Further information**

### **Product and service inquiries**

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to [www.abb.com/drives](http://www.abb.com/drives) and selecting Sales, Support and Service network.

### **Product training**

For information on ABB product training, navigate to [www.abb.com/drives](http://www.abb.com/drives) and select Training courses.

### **Providing feedback on ABB Drives manuals**

Your comments on our manuals are welcome. Go to [www.abb.com/drives](http://www.abb.com/drives) and select Document Library – Manuals feedback form (LV AC Drives).

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For more information,  
please contact us

**ABB Oy**

Drives

P.O. Box 184

FI-00381 HELSINKI

FINLAND

Telephone +358 10 22 11

[www.abb.com/drives](http://www.abb.com/drives)

Automation Technologies