

ABB industrial drives

User's manual
ACS800-01 democase



List of democase related manuals

<u>Drive manuals and guides</u>	<u>Code (English)</u>
ACS800-01/U1 Hardware Manual 0.55 to 200 kW (0.75 to 200 HP)	3AFE64382101
<u>Firmware manuals and guides</u>	<u>Code (English)</u>
Standard Control Program Firmware Manual	3AFE64527592
Adaptive Program, Application Guide	3AFE64527274
<u>Option manuals and guides</u>	<u>Code (English)</u>
RAIO-01 Analogue I/O extension module, User's manual	3AFE64484567
RDIO-01 Digital I/O extension module, User's manual	3AFE64485733
RDCO-01/-02/-03 DDCS communication option modules	3AFE64492209
<u>Tool and maintenance manuals and guides</u>	<u>Code (English)</u>
DriveWindow 2, User's manual	3BFE64560981

List of material codes related to democase

Material	Material code
ACS800-01 democase, complete	64545850
RAIO-01 Analogue I/O extension module	64606841
RDIO-01 Digital I/O extension module	64606816
RDCO-03 DDCS communication module	64606964
CDP 312R Control panel	68281059
Options (not included in the democase)	Material code
PC Tools	
DriveWindow 2.x (Win2000/XP/Vista/Win7), incl. RUSB-02 connection kit for laptop PC, english version	3AUA0000040000
R-series fieldbus adapters for option slot 1	
RDNA-01 DeviceNet Adapter	64606891
RPBA-01 PROFIBUS DP Adapter	64606859
RMBA-01 Modbus RTU Adapter	64606778
RLON-01 LONWorks Adapter	64606883
RCNA-01 Control Net Adapter	64751701
RCAN-01 CANOpen Adapter	64606905
RETA-01 Ethernet Adapter (EtherNet/IP, Modbus/TCP)	64751727
RETA-02 Ethernet Adapter (PROFINET I/O, Modbus/TCP)	68840830
RECA-01 EtherCat Adapter	3AUA0000045102
REPL-02 Ethernet Powerlink adapter	3AUA0000085536
Service	Material code
ACS800-01 democase service http://www.abb.com/partsonline	REPACS800DEMO

Safety instructions

General safety instructions

These safety instructions are intended for all personnel who work on the drive. For complete safety instructions, see the related ACS800-01/-U1 drive hardware manual.

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.
 - Check with a voltage indicating instrument that the drive is discharged before beginning work.
-

Delivery content

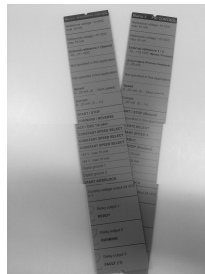
ACS800-01 democase contains:

1. Complete democase
 - ACS800-01 single drive with the following options
 - RAIO-01 analog I/O extension module
 - RDIO-01 digital I/O extension module
 - RDCO-03C DDCS communication option
 - CDP 312R control panel
 - I/O panel
 - Motor
2. I/O-panel text strips for drive application macros (2 pcs)
3. Mains (power) cord
4. Set of manuals and test reports

1



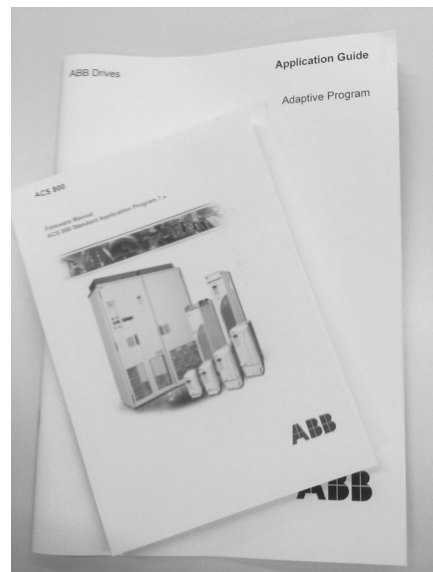
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3



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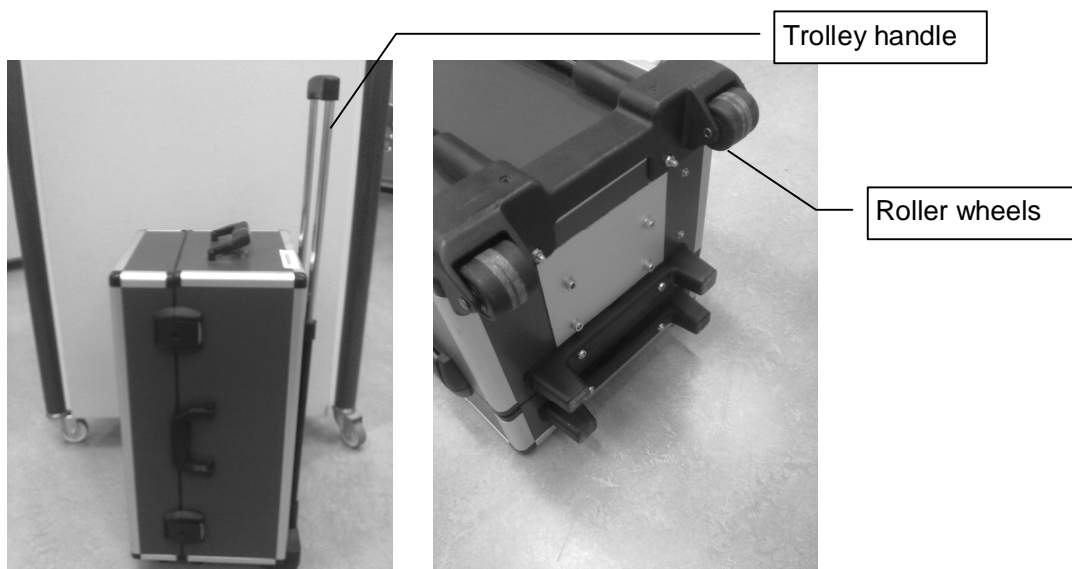
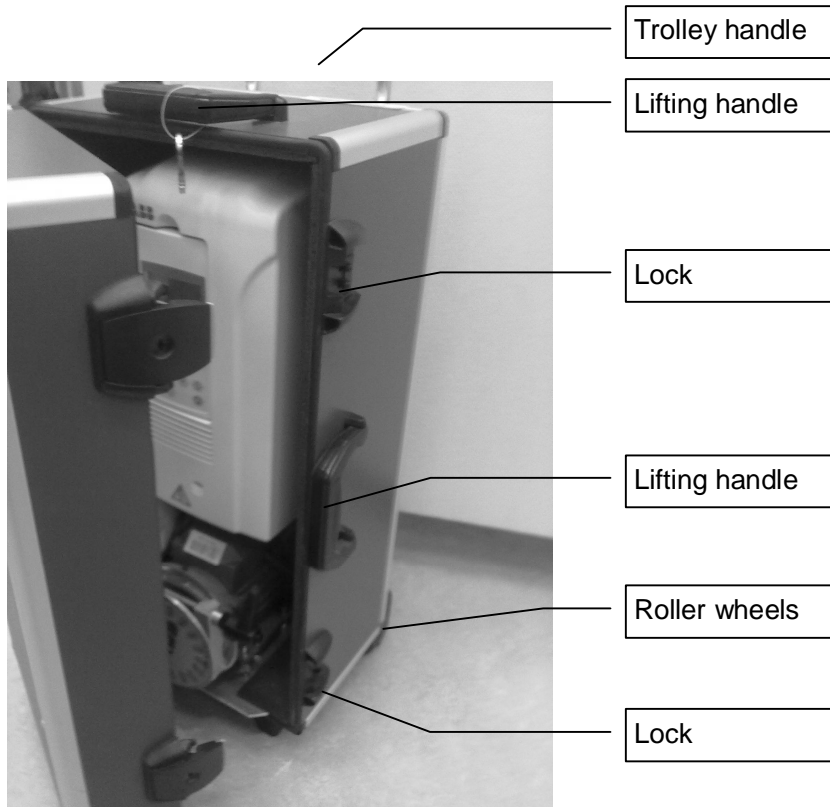
Basic start-up

1. Open the democase door.
2. Take out the mains cord from the case.
3. Plug in the mains cord*
4. Switch on the demo using the mains switch.
5. You can toggle control between the control panel and the IO-panel with the “Loc/Rem” –button on the control panel.
 - a. To change the operation macro, navigate to assistants with the “Func” – button and select “Application Marco”. Use the I/O-panel text strips to see default I/O-configurations.
Note! Option modules assistant is not supported from firmware revision AS7R7363 onwards.
6. Switch “Start Interlock” switch to “on” position to enable drive operation. See the switch location in “Lay-out of the I/O-panel” chapter in this manual.

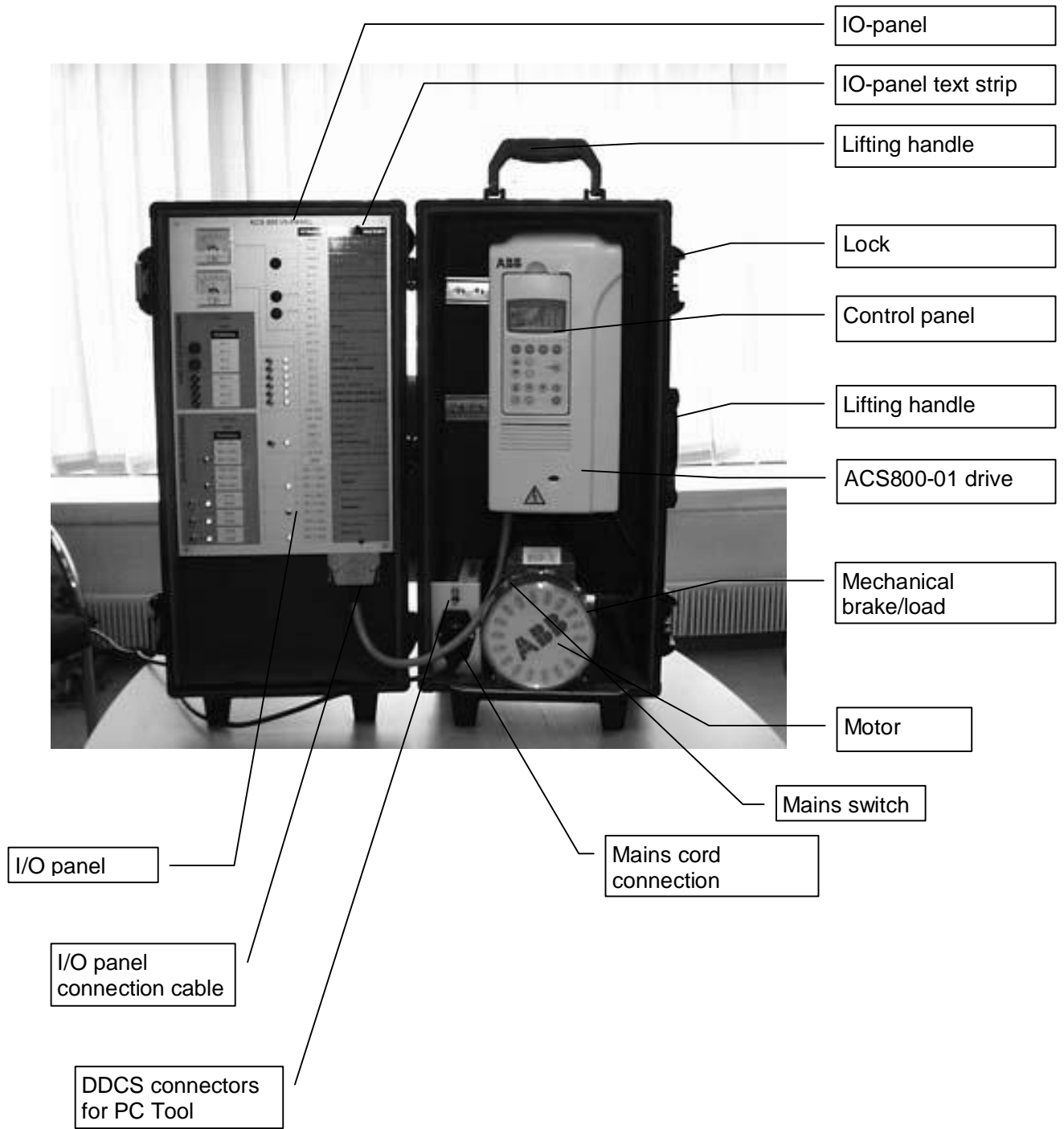
* For more information check “AC input (supply) connection” in the Technical data section

Layout

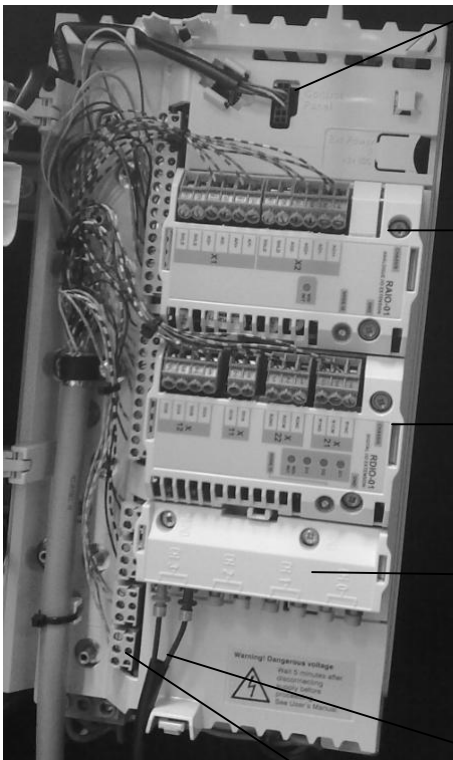
Outer lay-out of the democase



Inner lay-out of the democase



Option modules and connectivity



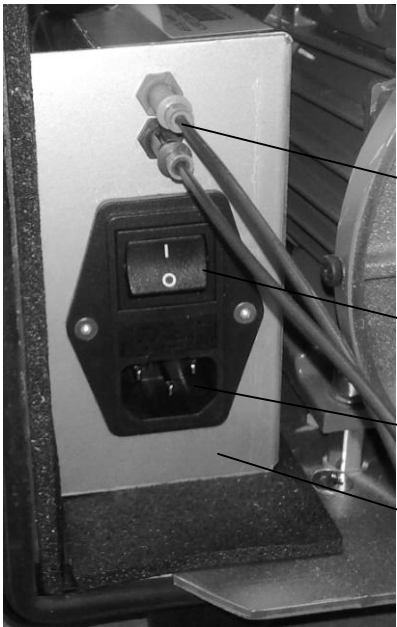
Cabling for control panel

Option slot 1
RAIO-01 analog I/O extension module
Note:
Optional fieldbus adapters supported in this slot.

Option slot 2
RDIO-01 digital I/O extension module

RDCO-03C DDCS communication option with fiber optics cabling to connectors

DDCS cabling for connectors for external communication



I/O-connectors

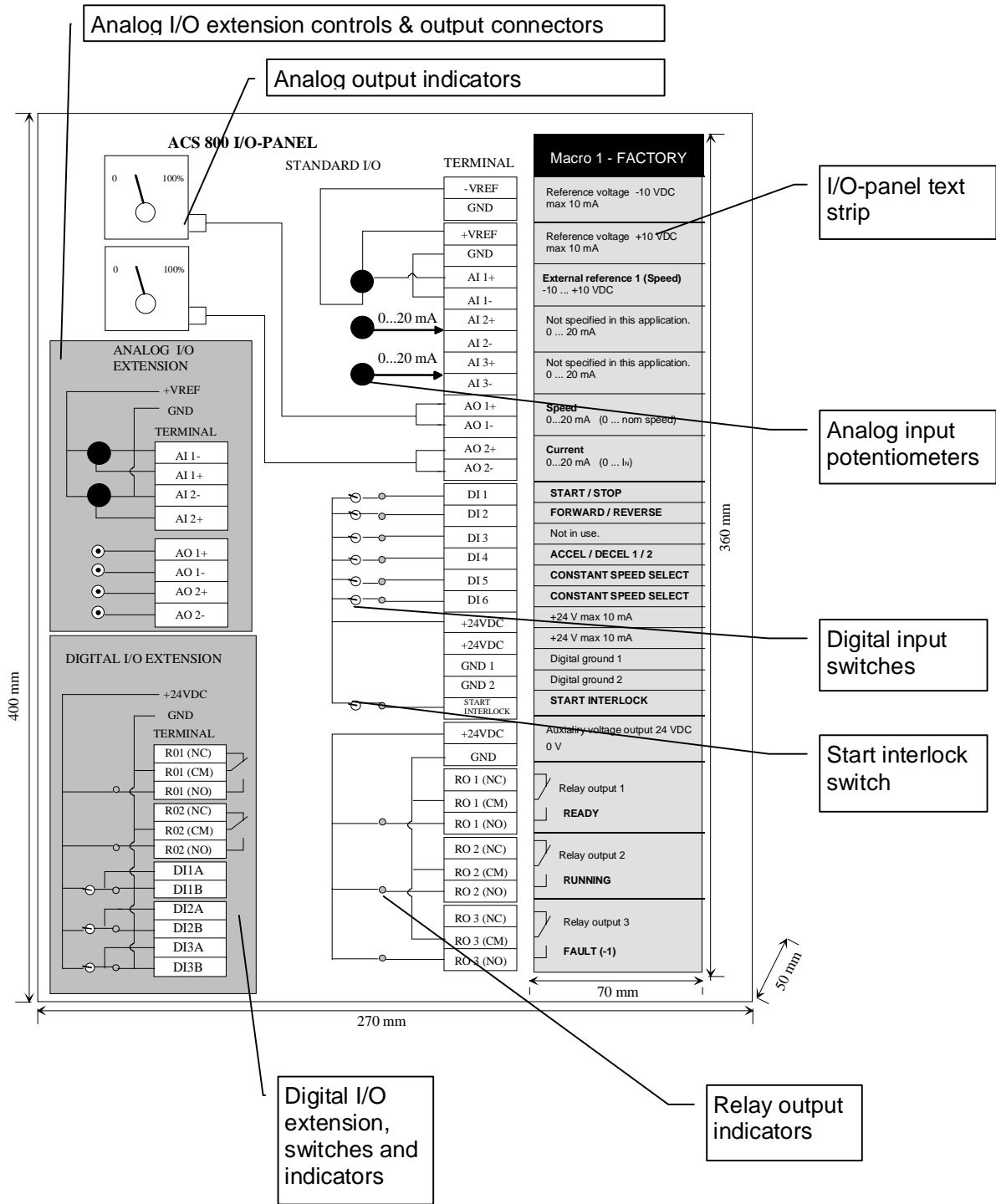
DDCS connectors for external communication, such as PC Tool

Mains switch

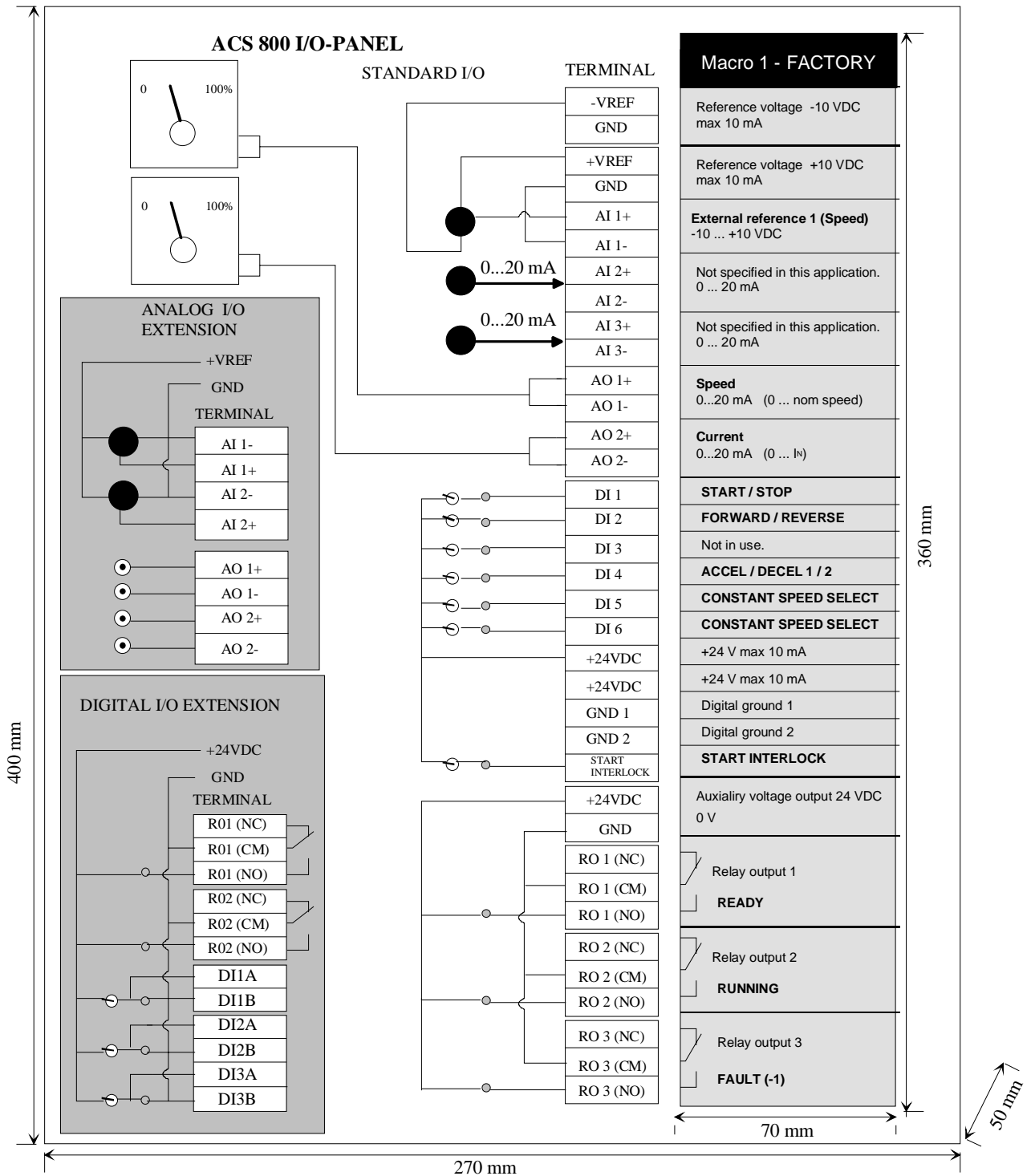
Mains cord connection

Protective fuses (inside)


Lay-out of the I/O panel



Large size image of the I/O panel



Large size image of the I/O-panel text strips for drive application macros

Macro 1 - FACTORY	Macro 2 - HAND / AUTO	Macro 3 - PID CONTROL	Macro 4 - TORQUE CONTROL	Macro 5 - SEQUENTIAL CONTROL
Reference voltage -10 VDC max 10 mA	Reference voltage -10 VDC max 10 mA	Reference voltage -10 VDC max 10 mA	Reference voltage -10 VDC max 10 mA	Reference voltage -10 VDC max 10 mA
Reference voltage +10 VDC max 10 mA	Reference voltage +10 VDC max 10 mA	Reference voltage +10 VDC max 10 mA	Reference voltage +10 VDC max 10 mA	Reference voltage +10 VDC max 10 mA
External reference 1 (Speed) -10 ... +10 VDC	External reference 1 / Hand (EXT 1) -10 ... +10 VDC (Speed)	External reference 1 / 2 -10 ... +10 VDC (Speed / Process)	External reference 1 (Speed ref, EXT1) -10 ... +10 VDC	External reference 1 (Speed) -10 ... +10 VDC
Not specified in this application. 0 ... 20 mA	External reference 2 / Auto (EXT 2) 0 ... 20 mA (Speed)	Actual signal (Process feedback) 0 ... 20 mA	Reference 2 signal (Torque ref, EXT2) 0 ... 20 mA	Not specified in this application.
Not specified in this application. 0 ... 20 mA	Not specified in this application.	Not specified in this application.	Not specified in this application.	Not specified in this application.
Speed 0...20 mA (0 ... nom speed)	Speed 0...20 mA (0 ... nom speed)	Speed 0...20 mA (0 ... Nom speed)	Speed 0...20 mA (0 ... Nom speed)	Speed 0...20 mA (0 ... Nom speed)
Current 0...20 mA (0 ... I _N)	Current 0...20 mA (0 ... I _N)	Current 0...20 mA (0 ... I _N)	Current 0...20 mA (0 ... I _N)	Current 0...20 mA (0 ... I _N)
START / STOP	START / STOP (Hand)	START / STOP (Manual)	START / STOP	START / STOP
FORWARD / REVERSE	FORWARD / REVERSE (Hand)	Not specified in this application.	FORWARD / REVERSE	FORWARD / REVERSE
Not in use.	EXT1 / EXT2 SELECT	EXT1 / EXT2 SELECT	SPEED / TORQUE CONTROL SEL	ACC / DEC 1/2 SEL
ACCEL / DECEL 1 / 2	CONSTANT SPEED 4	CONSTANT SPEED 4	CONSTANT SPEED 4	CONSTANT SPEED SELECT
CONSTANT SPEED SELECT	FORWARD / REVERSE (Auto)	RUN ENABLE	ACC / DEC 1/2 SEL	CONSTANT SPEED SELECT
CONSTANT SPEED SELECT	START / STOP (Auto)	START / STOP (Process)	RUN ENABLE	CONSTANT SPEED SELECT
+24 V max 10 mA	+24 V max 10 mA	+24 V max 10 mA	+24 V max 10 mA	+24 V max 10 mA
+24 V max 10 mA	+24 V max 10 mA	+24 V max 10 mA	+24 V max 10 mA	+24 V max 10 mA
Digital ground 1	Digital ground 1	Digital ground 1	Digital ground 1	Digital ground 1
Digital ground 2	Digital ground 2	Digital ground 2	Digital ground 2	Digital ground 2
START INTERLOCK	START INTERLOCK	START INTERLOCK	START INTERLOCK	START INTERLOCK
Auxiliary voltage output 24 VDC 0 V	Auxiliary voltage output 24 VDC 0 V	Auxiliary voltage output 24 VDC 0 V	Auxiliary voltage output 24 VDC 0 V	Auxiliary voltage output 24 VDC 0 V
 Relay output 1 <input type="checkbox"/> READY	 Relay output 1 <input type="checkbox"/> READY	 Relay output 1 <input type="checkbox"/> READY	 Relay output 1 <input type="checkbox"/> READY	 Relay output 1 <input type="checkbox"/> READY
 Relay output 2 <input type="checkbox"/> RUNNING	 Relay output 2 <input type="checkbox"/> RUNNING	 Relay output 2 <input type="checkbox"/> RUNNING	 Relay output 2 <input type="checkbox"/> RUNNING	 Relay output 2 <input type="checkbox"/> RUNNING
 Relay output 3 <input type="checkbox"/> FAULT (-1)	 Relay output 3 <input type="checkbox"/> FAULT (-1)	 Relay output 3 <input type="checkbox"/> FAULT (-1)	 Relay output 3 <input type="checkbox"/> FAULT (-1)	 Relay output 3 <input type="checkbox"/> FAULT (-1)

Default parameter changes for ACS800 democase

Note: The following parameter sets are specified to be used with FACTORY – application macro

Parameter	Name	Setting	Notes
99.01	LANGUAGE	ENGLISH	
99.02	APPLICATION MACRO	FACTORY	
99.03	APPLICATION RESTORE	NO	Use this to restore macro default parameters to drive

Motor parameters and ID-run

99	Motor data		
99.04	MOTOR CTRL MODE	DTC	
99.05	MOTOR NOM VOLTAGE	230 V	
99.06	MOTOR NOM CURRENT	1.2 A	
99.07	MOTOR NOM FREQ	50 Hz	
99.08	MOTOR NOM SPEED	1380 rpm	
99.09	MOTOR NOM POWER	0,2 kW	
99.10	MOTOR ID RUN MODE	STANDARD	

General recommendations

	Motor data		
10.03	REF DIRECTION	REQUEST	Forward/reverse running enabled
22.01	ACC/DEC SEL	DI4	Digital input 4
22.02	ACCEL TIME 1	3.0 s	Recommendation
22.03	DECEL TIME 1	3.0 s	Recommendation
22.04	ACCEL TIME 2	60.0 s	
22.05	DECEL TIME 2	60.0 s	

I/O settings

11	Standard AI		
98.03	DI/O EXT MODULE 1	RDIO-SLOT2	
98.07	AI/O EXT MODULE	RAIO-SLOT1	Set this to NONE, in case fieldbus adapter installed.

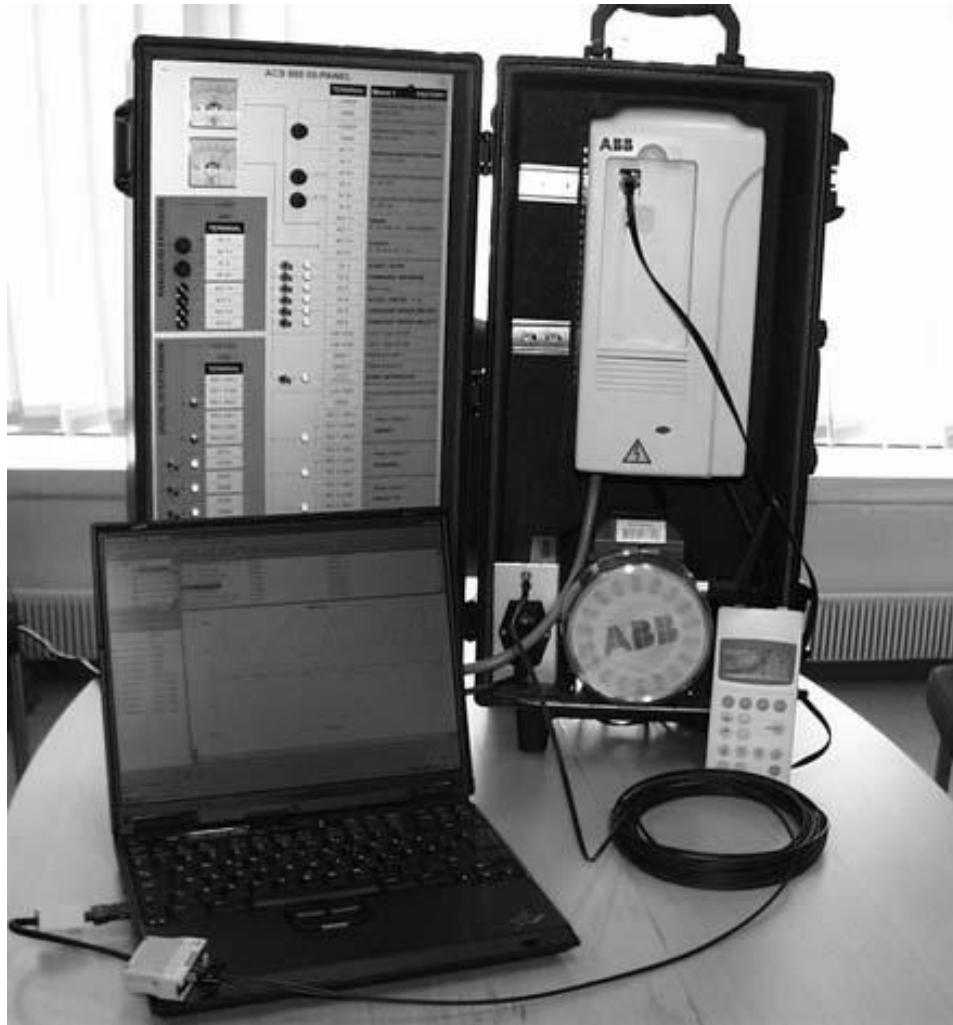
Accessories and options

PC tools

Optional PC tools can be connected either to control panel port or by DDCS fiber optics link. Connectors for the external DDCS communication are located above the mains switch.

An optional RUSB-02 USB/DDCS adapter for PC Tool communication is required with DriveWindow PC-tool communication over DDCS.

See further instructions from PC Tools related manuals.



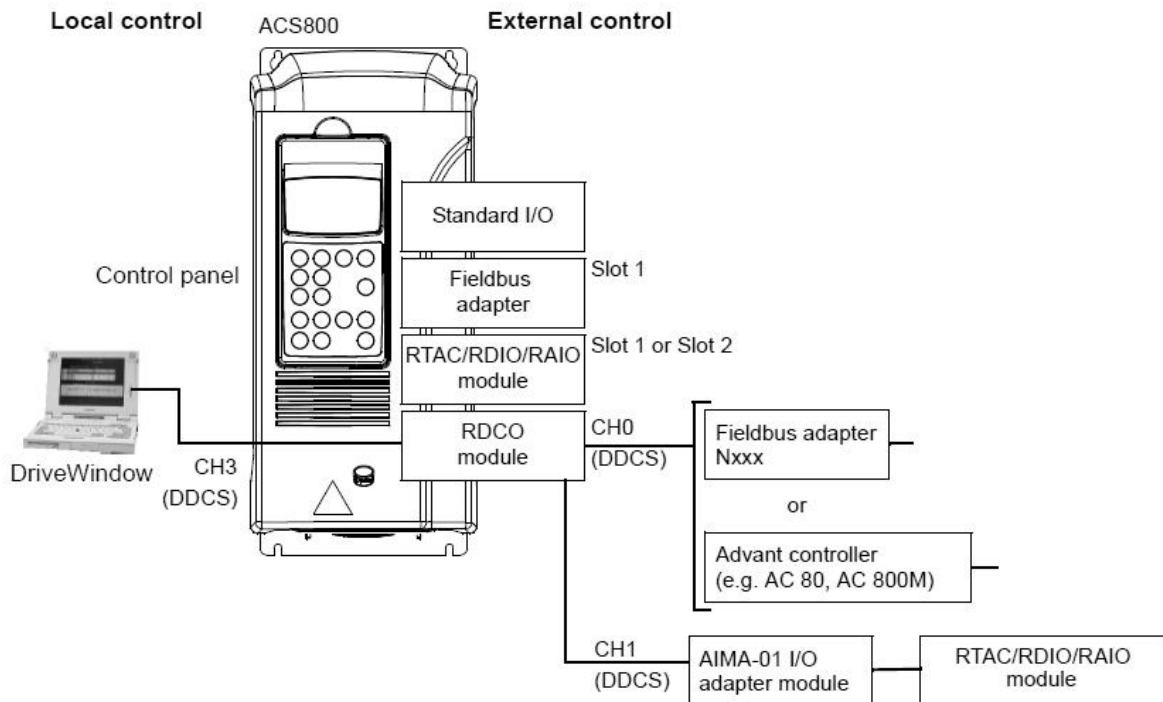
Fieldbus and I/O extension modules

Democase is equipped with

- Slot 1: RAIO-01 analog I/O extension module
- Slot 2: RDIO-01 digital I/O extension module
- RDCO-03C DDCS communication option

Other extensions are available. See further instructions in drive firmware manual.

To be able to use fieldbus adapters, configuration of the slot 1 is required to be changed to fieldbus and RAIO-01 analog I/O extension module removed.



Technical data

Dimensions (delivery package)

Height:	700 mm
Width:	350 mm
Depth:	350 mm
Weight:	27 kg (packing pallet excluded)

Dimensions (transportation)

Height:	670 mm
	730 mm (with lifting handle open)
	975 mm (trolley handle pulled up)
Width:	335 mm
	380 mm (with lifting handle open)
Depth:	335 mm
Weight:	25 kg

Dimensions (democase in use)

Height:	670 mm
Width:	650 mm (with democase open)
Depth:	280 mm
Weight:	25 kg



Devices

Drive ACS800-01 custom-build for democase purposes

Drive firmware:
ACS800 Standard control program A7R7365 or newer with democase customized parameter set.

Motor

M2VA63B-4 0,18kW 1380r/min 330-400 V Y, 50Hz 3GVA062142-ASC
custom-build for democase purposes

Nominal voltage	230 V
Nominal current	1,2 A
Nominal frequency	50 Hz
Nominal speed	1380 rpm
Nominal power	0,18 kW

AC input (supply) connection

U1 ~ 100V - 240V

Default setting 230V

The democase can be used with both 115V and 230V supply.
It is important to check that the input voltage (115V/230V) is in the
correctly connected to drive.

Supply connection box is equipped with 2 pieces of 6.3A 250V 5*20mm
quick blow fuses (MUL MCF05G 6.3A).



NOTE with 115V supply connection!

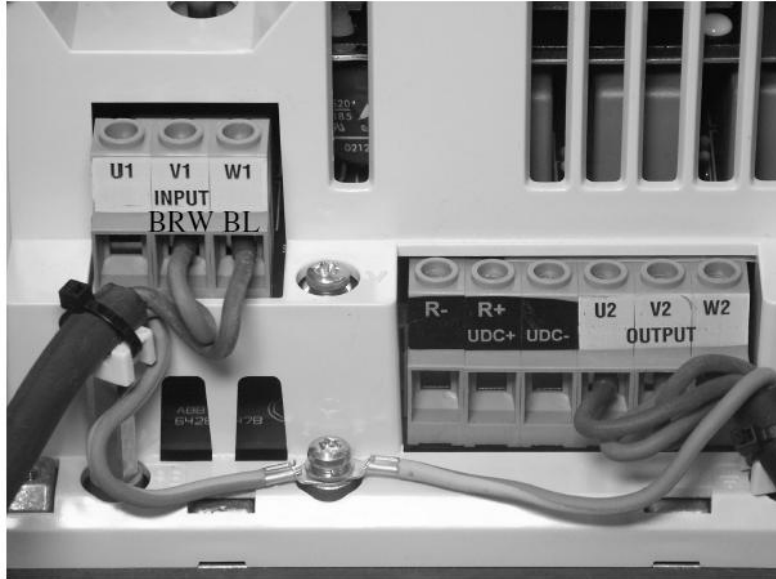
- Default supply connection is intended to be used with 230 V supply network.
 - Do not attempt any changes on powered drive.
 - After switching off the mains, always allow the intermediate circuit capacitors 5 minutes to discharge before doing any maintenance work on frequency converter, the motor or the motor cable.
 - It is good practice to check (with a voltage indicating instrument) that the drive is in fact discharged before beginning work.
-

AC input (supply) connection

Required changes for 115 V supply network

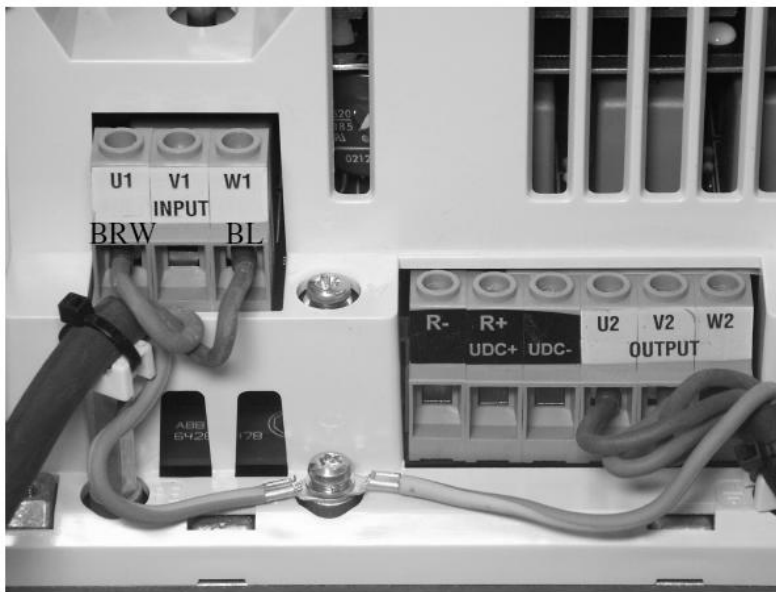
Connect supply cable to drive supply terminals V1 (brown wire) and W1 (blue wire).

Connection 115VAC



Default supply connection is for 230V and connected to supply terminals U1 (brown wire) and W1 (blue wire).

Connection 230VAC



Degree of protection

Drive: IP20
Motor: IP55

Ambient conditions

Ambient temperature:

- Transport: -40 to +70 °C
- Storage: -40 to +70 °C
- Operation: -15 to +50 °C, no frost allowed

Altitude:

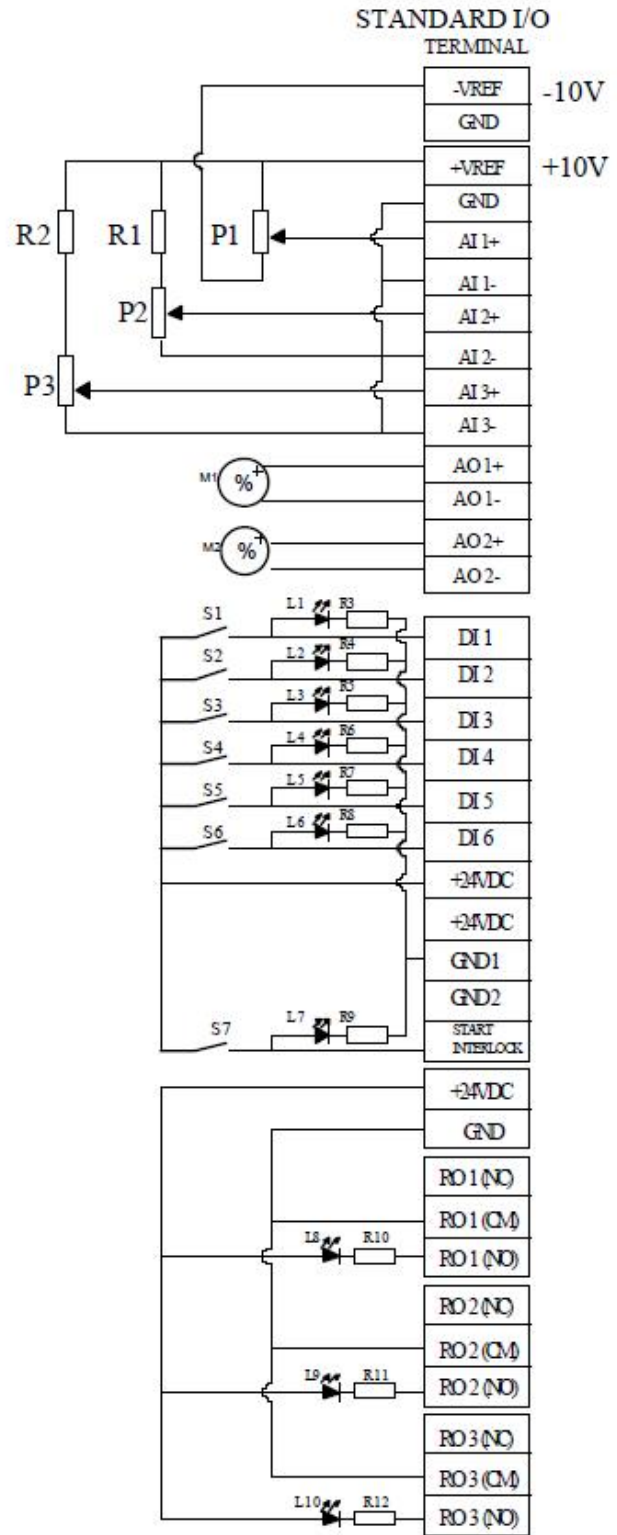
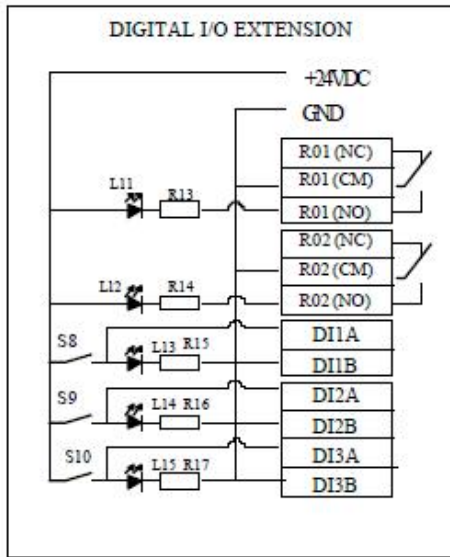
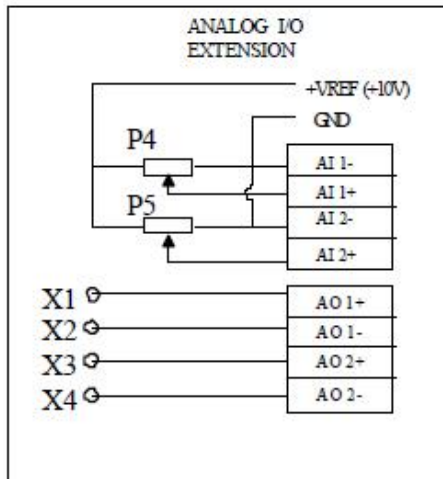
- 0 to 1,000 m

Relative humidity:

- 5 to 95%, no condensation allowed

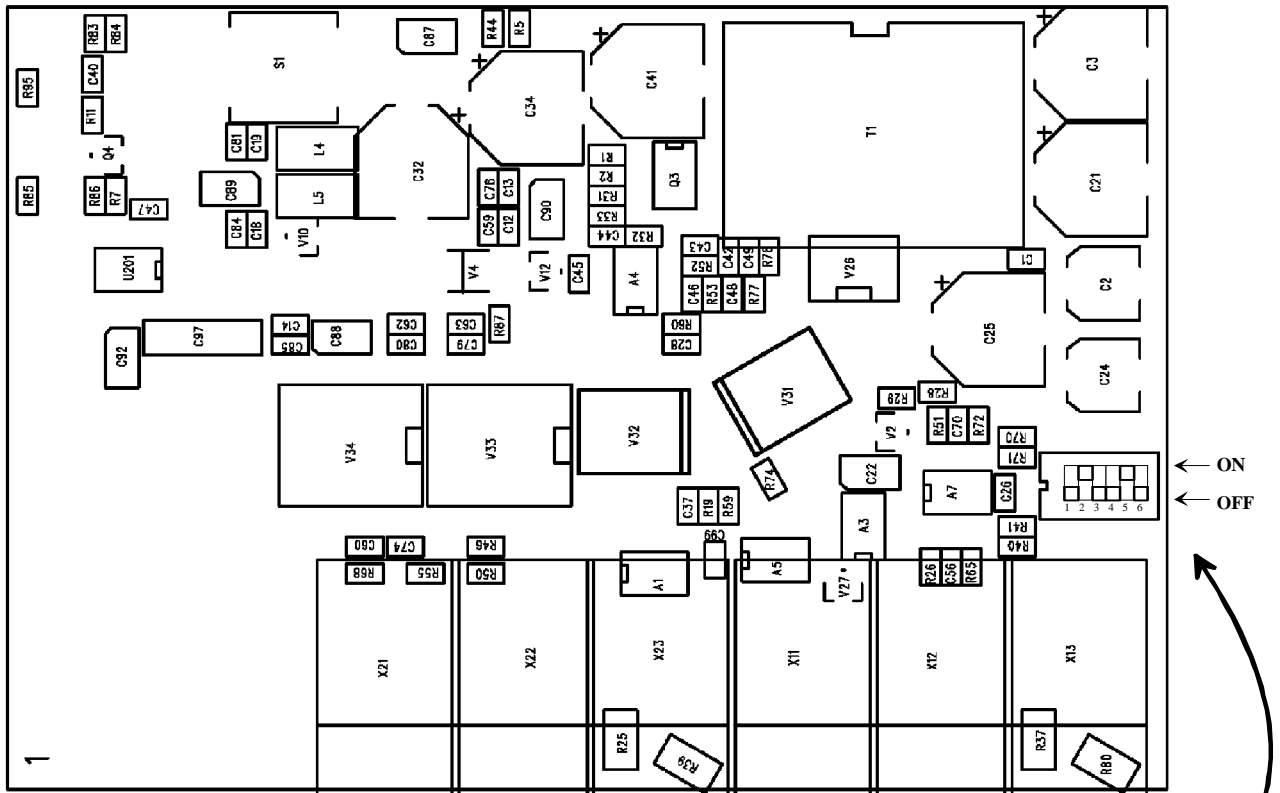
For more detailed information, refer to the drive Hardware Manual.

Wiring, control board and extension modules



RAIO-board DIP-switch settings for ACS800 demo suitcase

Set the DIL switch of RAIO-board according to this instruction.

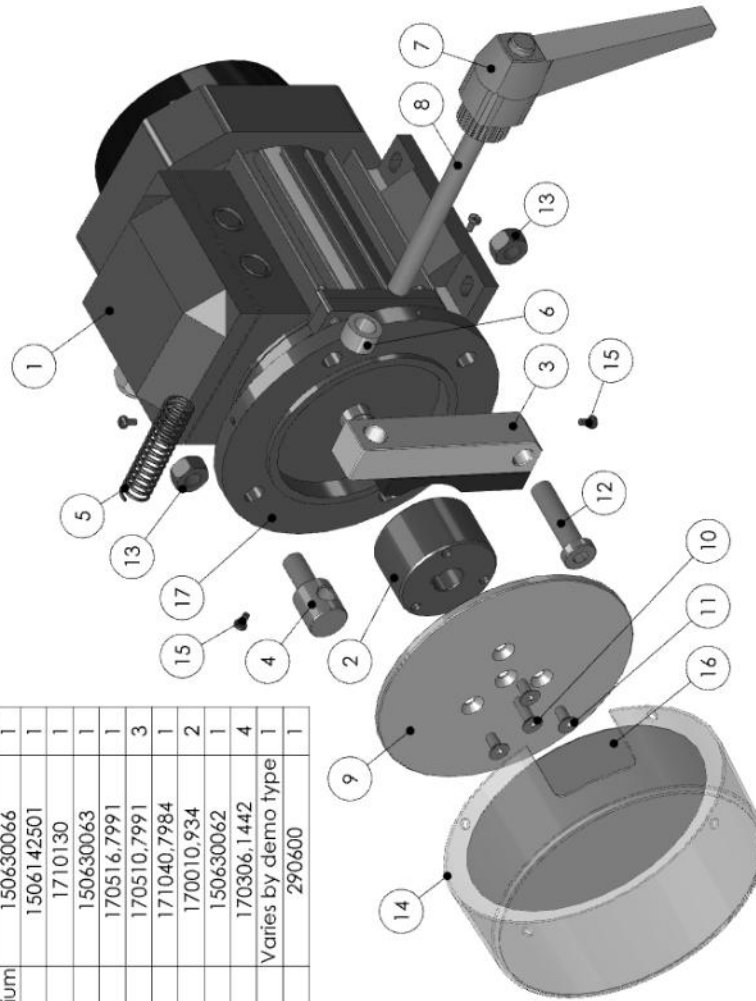


DIL switch S2

- 1=OFF**
- 2=ON**
- 3=OFF**
- 4=OFF**
- 5=ON**
- 6=OFF**

Brake mechanism, spare parts

ITEM NO.	PART NUMBER	APE CODE	QTY.
1	Motor, 3GVA062142-ASC	290601	1
2	Brake socket	150630064	1
3	Brake pad	150630065	1
4	Special bolt	150630068	1
5	Spring, d=11, L=75, s=1,5	15067511	1
6	Socket, D=17, d=10,5 L=10, Aluminium	150630066	1
7	Handle	1506142501	1
8	Threaded rod, M10, L=130	1710130	1
9	Disk, D=128, s=4	150630063	1
10	Screw, M5*16, DIN7991	170516,7991	1
11	Screw, M5*10, DIN7991	170510,7991	3
12	Screw, M10x40, DIN7984	171040,7984	1
13	Nut, M10x1,5, DIN934	170010,934	2
14	Cover	150630062	1
15	Screw, 3x6, DIN1442	170306,1442	4
16	ABB-logo Sticker, D=120	Varies by demo type	1
17	Flange, 3GVC061004-E	290600	1



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 and selecting Sales, Support and Service network.

Product training

For information on ABB product training, navigate to www.abb.com/drives and select Training courses.

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