ABB standard drive

ACS550, 0.75 kW - 355 kW

Technical catalogue

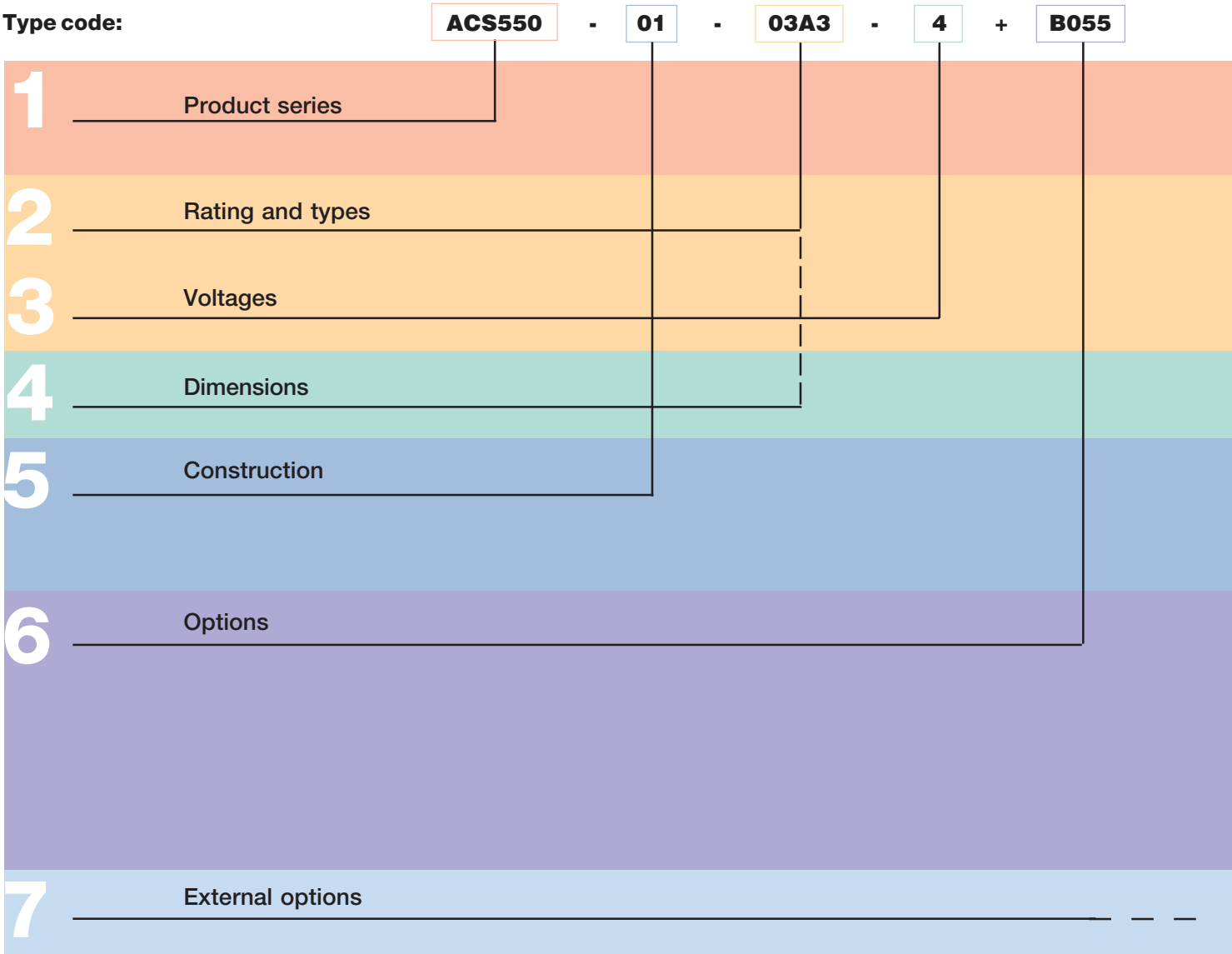
Drive^{IT} Low Voltage AC Drive

Two ways to select your drive

Choice 1: Simply contact your local ABB drives sales office (see page 15) and let them know what you want. Use page 3 as a reference section for more information.

OR

Choice 2: Build up your own ordering code using the simple 7-step approach below. Each step is accompanied by a reference to a page that is filled with useful information.



Contents

ABB standard drive, ACS550

ABB standard drive

ACS550 - 01 - 03A3 - 4 + B055

What is an ABB standard drive?

The ABB standard drive is simple to buy, install, configure and use, saving considerable time. It is widely available through ABB's distributors, hence the use of the term standard. The drive has common user and process interface with fieldbus, common software tools for sizing, commissioning, maintenance and common spare parts.

Where can it be used?

The ABB standard drive can be used in a wide range of industries. Typical applications include pump, fan and constant torque use, such as conveyors. The ABB standard drive is ideal in those situations where there is a need for simplicity to install, commission and use and where customizing or special product engineering is not required.

ABB standard drive promises

- Precise delivery
- Quick installation
- Rapid start-up
- Trouble-free use

Highlights

- Assistant control panel providing intuitive use of the drive
- Patent pending swinging choke for superior harmonic reduction
- Sensorless vector control
- Integral RFI filter for 1st and 2nd environment as standard
- Flexible fieldbus system with built-in Modbus and numerous internally mountable fieldbus adapters
- UL, cUL and CE approved

What are its main features?

Feature	Note	Benefit
Assistant control panel	Two soft-keys, function of which changes according to the state of the panel Built-in "Help" button Real-time clock, allows timed tracing of faults and setting of parameters to activate at various times of day Changed parameters menu	Easy commissioning Fast set-up Easier configuration Rapid fault diagnosis Quick access to recent parameter changes
Brake chopper	Built-in up to 11 kW	Reduced cost
Chokes	Swinging DC chokes - matches the right inductance to the right load, thereby suppressing and reducing harmonics	Reduces Total Harmonic Distortion (THD) emissions up to 25%
Connectivity	Simple to install: Easy connection of cables Easy connection to external fieldbus systems through multiple I/Os and plug-in options	Reduced installation time Secure cable connections
Diagnostic assistant	Activated when fault occurs	Quick fault diagnostics
EMC	1st and 2nd environment RFI filters as standard	No need for additional external filtering
Fieldbus	Built-in Modbus using RS 485 Optional plug-in fieldbus modules	Reduced cost
Intuitive features	Noise optimisation: Increases switching frequency of drive when drive temperature is reduced Controlled cooling fan: Drive is cooled only when necessary	Considerable motor noise reduction Reduces inverter noise and improves energy efficiency
Maintenance assistant	Monitors running hours or motor rotation	Takes care of preventative maintenance of drive, the motor or run application
Mounting template	Supplied separately with unit	Quick and easy to mark mounting screw holes on installation surface
Sensorless vector control	Improved motor control performance	Enables wider range of applications
Start-up assistant	Guides user through all essential settings without going to parameter list	Easy set-up of parameters

Ratings, types and voltages

ACS550 - 01 - 03A3 - 4 + B055

Type code

This is the unique reference number (shown above and in column 7, right) that clearly indentifies your drive by power rating and frame size. Once you have selected the type code, the frame size (column 8) can be used to determine the drives dimensions, shown below.

Voltages

The ACS550 is available in two voltage ranges:
4 = 380 - 480V
2 = 208 - 240V*
* This voltage range is unavailable at the time of printing. Please contact your local ABB office for more information.

Insert either "4" or "2", depending on your chosen voltage, into the type code shown above.

Normal use vs heavy-duty use. For the majority of pump, fan and conveyor applications, select **"Normal use"** figures. For high overload requirements, select **"Heavy-duty use"** figures. If in doubt contact your local ABB sales office or your drives distributor - see page 15.

P_N for kW = Typical motor power in 400 V at normal use
P_N for hp = Typical motor power in 460 V at normal use
P_{hd} for kW = Typical motor power in 400 V at heavy-duty use
P_{hd} for hp = Typical motor power in 460 V at heavy-duty use

Wall mounted units

3-phase supply voltage 380-480 V							
Ratings						Type code	Frame size
Normal use			Heavy-duty use				
P_N kW	P_N hp	I_{2N} A	P_{hd} kW	P_{hd} hp	I_{2hd} A		
1.1	1.5	3.3	0.75	1	2.4	ACS550-01-03A3-4	R1
1.5	2	4.1	1.1	1.5	3.3	ACS550-01-04A1-4	R1
2,2	3	5.4	1.5	2	4.1	ACS550-01-05A4-4	R1
3	3	6.9	2.2	3	5.4	ACS550-01-06A9-4	R1
4	5	8.8	3	3	6.9	ACS550-01-08A8-4	R1
5.5	7.5	11.9	4	5	8.8	ACS550-01-012A-4	R1
7.5	10	15.4	5.5	7.5	11.9	ACS550-01-015A-4	R2
11	15	23	7.5	10	15.4	ACS550-01-023A-4	R2
15	20	31	11	15	23	ACS550-01-031A-4	R3
18.5	25	38	15	20	31	ACS550-01-038A-4	R3
22	30	44	18.5	25	38	ACS550-01-044A-4	R4
30	40	59	22	30	44	ACS550-01-059A-4	R4
37	50	72	30	40	59	ACS550-01-072A-4	R4
45	75	96	37	60	77	ACS550-01-096A-4	R5
55	100	124	45	75	96	ACS550-01-124A-4	R6
75	125	157	55	100	124	ACS550-01-157A-4	R6
90	150	180	75	125	156	ACS550-01-180A-4	R6

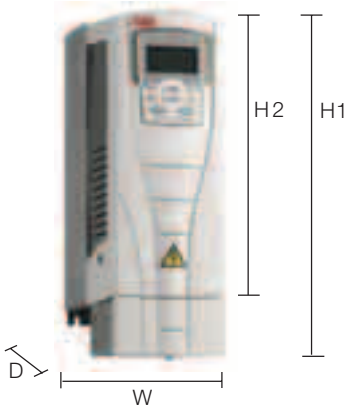
Free standing units

110	150	196	90	125	162	ACS550-02-196A-4	R7
132	200	245	110	150	192	ACS550-02-245A-4	R7
160	200	289	132	200	224	ACS550-02-289A-4	R7
200	300	368	160	250	302	ACS550-02-368A-4	R8
250	400	486	200	350	414	ACS550-02-486A-4	R8
280	450	526	250	400	477	ACS550-02-526A-4	R8
315	500	602	280	450	515	ACS550-02-602A-4	R8
355	500	645	315	500	590	ACS550-02-645A-4	R8

Dimensions

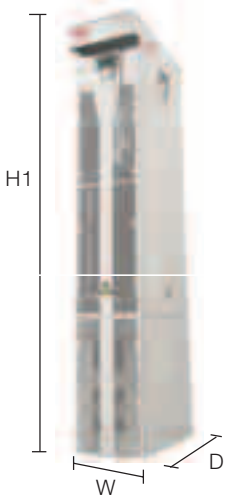
ACS550 - 01 - 03A3 - 4 + B055

Wall mounted units



H1 = Height with cable connection box
H2 = Height without cable connection box
W = Width D = Depth

Free standing units



Wall mounted units

Frame size	Dimensions and weights								
	IP 21 / UL type 1					IP 54 / UL type 12			
	H1 mm	H2 mm	W mm	D mm	Weight kg	H mm	W mm	D mm	Weight kg
R1	369	330	125	212	6.17	441	213	238	2)
R2	469	430	125	222	8.85	541	215	245	2)
R3	583	490	203	231	19.2	604	257	276	2)
R4	689	596	203	262	22.5	723	257	306	2)
R5	739	602	265	286	29.9	2)	2)	2)	2)
R6	880	700	300	400	59.9	2)	2)	2)	2)

Free standing units

R7	1507	n/a	250 1)	520 1)	195	2)	2)	2)	2)
R8	2024	n/a	347 1)	617 1)	375	2)	2)	2)	2)

1) The dimensions apply to bookshelf mounting. In flat type mounting the width and depth change places
2) Available later

Construction

ACS550 - 01 - 03A3 - 4 + B055

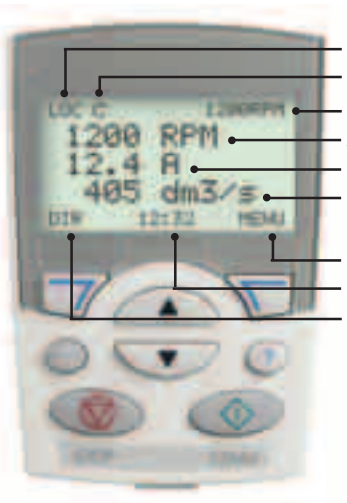
"01" within the type code (shown above) varies depending on the drive mounting arrangement, and power rating. Choose the correct one for your needs from the table below:

01	02	for IP 54 units...
■ Wall mounted, frame size R1-R6 ■ 0.75 to 90 kW ■ IP 21 ■ Built-in EMC filter ■ Standard software ■ Built-in Modbus interface ■ Cable connection box ■ Brake chopper in frame sizes R1-R2 ■ Assistant control panel	■ Free standing, frame size R7-R8 ■ 90 to 355 kW ■ IP 21 ■ Built-in EMC filter ■ Standard software ■ Built-in Modbus interface ■ Pedestal unit ■ Assistant control panel	■ If IP 54 is required, simply select "01" or "02", depending on your required mounting arrangement and then see page 7 to find the correct "Option" code

Assistant control panel

For easy drive programming, a detachable, multi-lingual alphanumeric assistant control panel is delivered as standard. The control panel has various assistants and a built-in help function to guide the user. It includes a real time clock, which can be used during fault logging and in controlling the drive, such as start/stop. The control panel can be used for copying parameters for back up or for downloading to another drive. A large graphical display and soft keys make it extremely easy to navigate.

Name	Function
Start	Initiates operation of drive
Stop	Ceases operation of drive
Up	Changes parameters and their value/ increases reference
Down	Changes parameters and their value/ decreases reference
Loc/Rem	Changes drive state from local control (control panel) to remote control (I/O or other external source)
HELP	Built-in "Help" button
Soft key 1	Function changes according to state of panel
Soft key 2	Function changes according to state of panel



Options

Control interfaces

ACS550 - 01 - 03A3 - 4 + B055

How to select options

The options shown below are available within the ACS550 range. Each has an associated 4-figure option code, which is shown in the table. It is this code that replaces B055 in the type code above. You can order as many options as required, simply by extending the code as necessary.

Available options

Protection class		
B055	IP 54	
P901	Coated boards (available later)	
Control panel		
0J400	If no control panel is required	
J404	Basic control panel	ACS-CP-C
I/O options[1]		
L511	Relay output extension	OREL-01
Fieldbus[2]		
K451	DeviceNet	RDNA-01
K452	LonWorks	RLON-01
K454	Profibus-DP	RPBA-01
K457	CANOpen	RCAN-01
K462	ControlNet	RCNA-01

[1] One slot available for relay
[2] One slot available for fieldbus adapter. Modbus built-in as standard.

Basic control panel

The basic control panel features a single line numeric display. The panel can be used to control the drive, set the parameter values or copy them from one drive to another.

DriveWindow Light 2

DriveWindow Light 2 is PC software used for rapid commissioning and controlling of drives. It has features for programming, monitoring, trouble shooting and maintenance.

It is also a set-up and control tool which is Win98, WinNT, Win2000 and WinXP compatible.

DriveWindow Light 2 operates both off- and on-line. No additional PC hardware is required. It uses the PC's RS-232 port. It is compatible with drive types ACS140, ACS160, ACS400, ACS550, ACS600, ACS800 and DCS400.

DriveWindow Light 2 features

- Graphical start-up wizards
- Off- and on-line viewing and changing of drive parameters
- Backup and restore parameters. In a fault situation the parameters can be reloaded resulting in time savings
- Graphical monitoring of actual signal values
- I/O mapping table
- Control of the drive

Removing the panel

STEP 1

STEP 2

STEP 3

Options

Plug-in options

ACS550 - 01 - 03A3 - 4 + B055

Relay output extension option module

This plug-in option offers three additional relay outputs. They can be used, for example, in pump and fan control or many supervisory functions. All the relays can be programmed to on/off by using the assistant control panel's clock. Alternatively, fieldbus can be used to control any external components in the system.

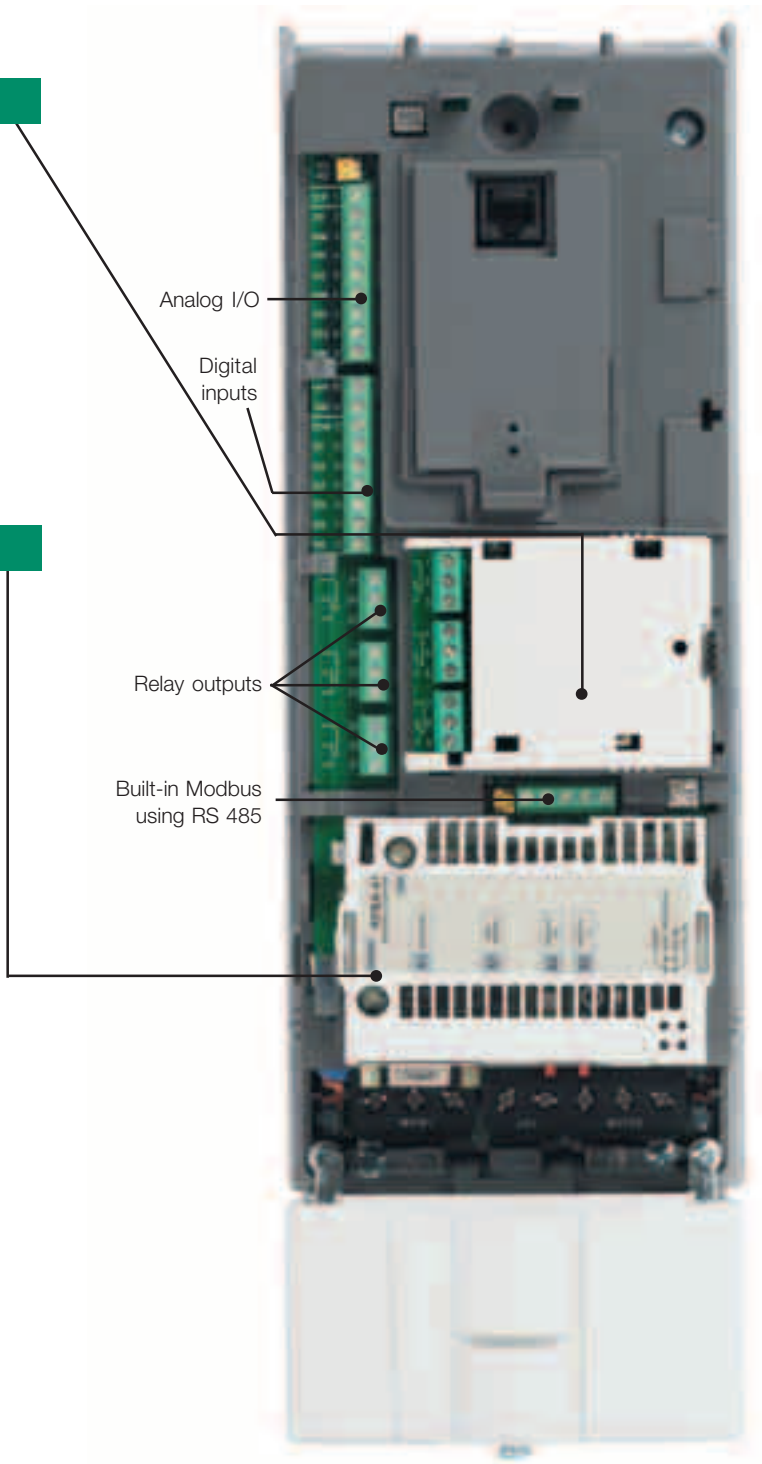
Plug-in fieldbus module

The plug-in fieldbus options bring connectivity to major automation systems. A single twisted pair avoids large amounts of conventional cabling, thereby reducing cost and increasing system reliability.

The ACS550 supports the following fieldbus options:

- DeviceNet
- LonWorks
- Profibus-DP
- CANOpen
- ControlNet

For type codes see page 7



Options

External options

A separate order line and type code is required for any of these external options. These numbers are shown in the last column of the respective tables.

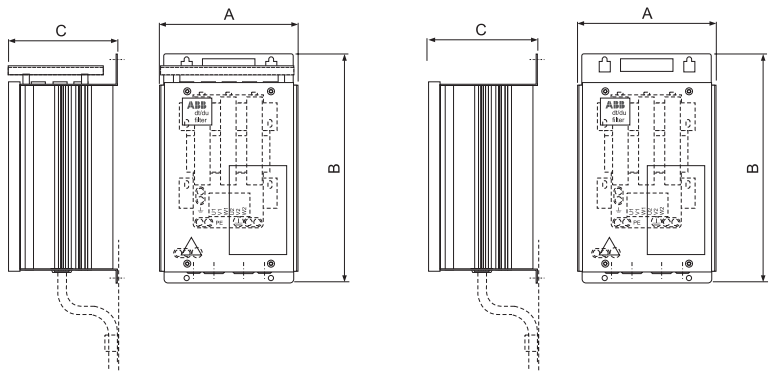
Output chokes

Output chokes are used when motor cables above normal length are required. Cable can be roughly 1.5 times standard cable length, see below. The maximum switching frequency with output chokes is 4 kHz.

Selection table

Type code	Max. cable mm²	I A	Max. cable length with choke (m)	Max. cable length without choke (m)	Output choke type code
ACS550-01-03A3-4	10	15	150	100	NOCH-0016-6X
ACS550-01-04A1-4	10	15	150	100	NOCH-0016-6X
ACS550-01-05A4-4	10	15	150	100	NOCH-0016-6X
ACS550-01-06A9-4	10	15	150	100	NOCH-0016-6X
ACS550-01-08A8-4	10	15	150	100	NOCH-0016-6X
ACS550-01-012A-4	10	15	150	100	NOCH-0016-6X
ACS550-01-015A-4	10	15	250	200	NOCH-0016-6X
ACS550-01-023A-4	10	15	250	200	NOCH-0016-6X
ACS550-01-031A-4	16	28	250	200	NOCH-0030-6X
ACS550-01-038A-4	16	28	250	200	NOCH-0030-6X
ACS550-01-044A-4	35	65	300	200	NOCH-0070-6X
ACS550-01-059A-4	35	65	300	200	NOCH-0070-6X
ACS550-01-072A-4	35	65	300	200	NOCH-0070-6X

X stands for degree of protection where 2 = IP 22 and 5 = IP 54



Dimensions

Output choke type code	A mm	B mm	C mm	Weight kg
NOCH-0016-62/65	199	323	154	6
NOCH-0030-62/65	249	348	172	9
NOCH-0070-62/65	279	433	202	15.5

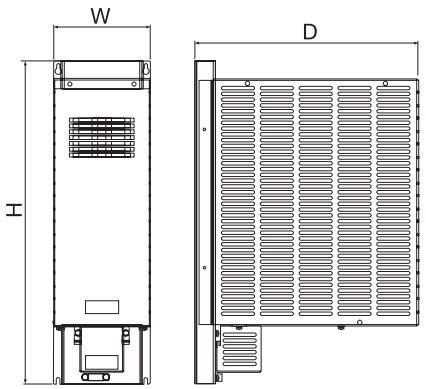
Note
An output choke does not improve the EMC performance of the drive. To fulfil local EMC requirements use sufficient RFI filtering. For more information refer to the ACS550 Technical Reference Manual.

Options

External options

Brake units and choppers

Frame sizes R1 to R2 are delivered with integrated brake choppers as standard. Other units can use the compact-sized brake units which include brake chopper and resistor. For more information please refer to the ACS-BRK Brake Units Installation and Start-up Guide.



Brake units technical data

Frequency converter input voltage	Resistor ohm	Continuous output W	Max. output 20 s W	Brake unit type code
200 - 240 V AC 380 - 480 V AC	32	2000	4500 12000	ACS-BRK-C
200 - 240 V AC 380 - 480 V AC	10.5	7000	14000 42000	ACS-BRK-D

Dimensions

Width (W) mm	Height (H) mm	Depth (D) mm	Weight kg	Brake unit type code
150	500	347	7.5	ACS-BRK-C
270	600	450	20.5	ACS-BRK-D

Technical data

Cooling

ACS550 is fitted with cooling air fans. The cooling air must be free from corrosive materials and not above the maximum ambient temperature of 40°C (50°C with derating). For more specific environmental limits see page 12.

Free space requirements

Enclosure type	Space above mm	Space below mm	Space on left/right mm
Wall mounted	200	200	25/25
Free standing	200	0	0

Cooling air flow

Type code	Frame size	Heat dissipation	
		W	BTU/Hr
ACS550-01-03A3-4	R1	40	137
ACS550-01-04A1-4	R1	52	178
ACS550-01-05A4-4	R1	73	249
ACS550-01-06A9-4	R1	97	331
ACS550-01-08A8-4	R1	127	434
ACS550-01-012A-4	R1	172	587
ACS550-01-015A-4	R2	232	792
ACS550-01-023A-4	R2	337	1151
ACS550-01-031A-4	R3	457	1561
ACS550-01-038A-4	R3	562	1919
ACS550-01-044A-4	R4	667	2278
ACS550-01-059A-4	R4	907	3098
ACS550-01-072A-4	R4	1120	3825
ACS550-01-096A-4	R5	1440	4918
ACS550-01-124A-4	R6	1940	6625
ACS550-01-157A-4	R6	2310	7889
ACS550-01-180A-4	R6	2810	9597
ACS550-02-196A-4	R7	3050	10416
ACS550-02-245A-4	R7	3850	13148
ACS550-02-289A-4	R7	4550	15539
ACS550-02-368A-4	R8	6850	23394
ACS550-02-486A-4	R8	7850	26809
ACS550-02-526A-4	R8	7600	25955
ACS550-02-602A-4	R8	8100	27663
ACS550-02-645A-4	R8	9100	31078

Technical data

Input cable and fuse connections

Standard fuses can be used with ABB standard drives.
For input cable and fuse connections see table below.

Recommended input protection fuses

Type code	Frame size	IEC fuses					UL fuses			
		Input power cable Cu mm²	A	V	Manufacturer	Fuse type	Input power cable AWG	A	V	Fuse type
ACS550-01-03A3-4	R1	1.5	10	600	N.A	IEC 269gG	14	10	600	UL Class T
ACS550-01-04A1-4	R1	1.5	10	600	N.A	IEC 269gG	14	10	600	UL Class T
ACS550-01-05A4-4	R1	1.5	10	600	N.A	IEC 269gG	14	10	600	UL Class T
ACS550-01-06A9-4	R1	1.5	10	600	N.A	IEC 269gG	14	10	600	UL Class T
ACS550-01-08A8-4	R1	1.5	10	600	N.A	IEC 269gG	14	10	600	UL Class T
ACS550-01-012A-4	R1	2.5	16	600	N.A	IEC 269gG	12	16	600	UL Class T
ACS550-01-015A-4	R2	2.5	16	600	N.A	IEC 269gG	10	16	600	UL Class T
ACS550-01-023A-4	R2	6	25	600	N.A	IEC 269gG	8	25	600	UL Class T
ACS550-01-031A-4	R3	10	35	600	N.A	IEC 269gG	8	35	600	UL Class T
ACS550-01-038A-4	R3	16	50	600	N.A	IEC 269gG	6	50	600	UL Class T
ACS550-01-044A-4	R4	16	50	600	N.A	IEC 269gG	6	50	600	UL Class T
ACS550-01-059A-4	R4	25	63	600	N.A	IEC 269gG	4	63	600	UL Class T
ACS550-01-072A-4	R4	35	80	600	N.A	IEC 269gG	3	80	600	UL Class T
ACS550-01-096A-4	R5	50	125	600	N.A	IEC 269gG	1	125	600	UL Class T
ACS550-01-124A-4	R6	70	150	600	N.A	IEC 269gG	1/0	150	600	UL Class T
ACS550-01-157A-4	R6	95	200	600	N.A	IEC 269gG	4/0	200	600	UL Class T
ACS550-01-180A-4	R6	120	250	600	N.A	IEC 269gG	250MCM	250	600	UL Class T
ACS550-02-196A-4	R7	3x185+195	250	500	ABB	OFAF1H250	*	250	500	UL Class T
ACS550-02-245A-4	R7	3x240+120	250	500	ABB	OFAF1H250	*	250	500	UL Class T
ACS550-02-289A-4	R7	2x(3x95+50)	315	500	ABB	OFAF1H315	*	315	500	UL Class T
ACS550-02-368A-4	R8	2x(3x150+95)	400	500	ABB	OFAF1H400	*	400	500	UL Class T
ACS550-02-486A-4	R8	2x(3x240+120)	500	500	ABB	OFAF1H500	*	500	500	UL Class T
ACS550-02-526A-4	R8	3x(3x150+95)	630	500	ABB	OFAF1H630	*	630	500	UL Class T
ACS550-02-602A-4	R8	3x(3x185+95)	630	500	ABB	OFAF1H630	*	630	500	UL Class T
ACS550-02-645A-4	R8	3x(3x185+95)	800	500	ABB	OFAF1H800	*	800	500	UL Class T

*Available later

Technical specification

ACS550 - 01 - 03A3 - 4 + B055

Mains connection

Voltage and power range	3-phase, 380 to 480 V, +10/-15%, 0.75 - 355 kW 3-phase, 200 to 240 V, +10/-15%, 0.75 - 75 kW Auto-identification of input line
Frequency	48 to 63 Hz
Power factor	0.98

Motor connection

Voltage	3-phase, from 0 to U_{SUPPLY}
Frequency	0 to 500 Hz
Continuous loading capability (constant torque at a max ambient temperature of 40ºc)	Rated output current I_2
Overload capacity (at a max. ambient temperature of 40ºc)	At normal use 1.1 x I_{2N} for 1 minute every 10 minutes At heavy-duty use 1.5 x I_{2hd} for 1 minute every 10 minutes Always 1.8 x I_{2hd} for 2 seconds every 60 seconds
Switching frequency	
Standard	Default 4 kHz
Selectable	0.75 - 90 kW 1 kHz, 4 kHz, 8 kHz up to 355 kW 1 kHz, 4 kHz
Acceleration time	0.1 to 1800 s
Deceleration time	0.1 to 1800 s

Environmental limits

Ambient temperature	
-15 to 40ºC	No frost allowed
40 to 50ºC	f_{switch} 4 kHz, derating please contact supplier
Altitude	
Output current	Rated current available at 0 to 1000 m reduced by 1% per 100 m over 1000 m to 2000 m
Relative humidity	lower than 95% (without condensation)
Protection class	IP 21 or IP 54
Enclosure colour	NCS 1502-Y, RAL 9002, PMS 420 C
Contamination levels	No conductive dust allowed
Transportation	IEC60721-3-1, class 1C3 (chemical gases), Class 1S3 (solid particles)
Storage	IEC60721-3-2, Class 2C3 (chemical gases), Class 2S3 (solid particles)
Operation	IEC60721-3-3, Class 3C3 (chemical gases), Class 3S3 (solid particles)

Programmable control connections

Two analog inputs	
Voltage signal	0 (2) to 10 V, R_{in} > 312 kΩ single-ended
Current signal	0 (4) to 20 mA, R_{in} = 100 Ω single-ended
Potentiometer reference value	10 V ±2% max. 10 mA, R < 10 kΩ
Maximum delay	12...32 ms
Resolution	0.1%
Accuracy	±1%
Two analog outputs	0 (4) to 20 mA, load < 500 Ω
Auxiliary voltage	24 V DC ±10%, max. 250 mA
Six digital inputs	12 V... 24 V DC with internal or external supply, PNP and NPN
Input impedance	2.4 kΩ
Maximum delay	5 ms ± 1ms
Three relay outputs	
Maximum switching voltage	250 V AC/30 V DC
Maximum switching current	6 A/30 V DC; 1500 V A/230 V AC
Maximum continuous current	2 A rms
Serial communication	
RS 485	Modbus protocol

Protection limits

Overvoltage trip limits	
Running V DC	842 (corr. to 595 V input)
Start inhibit V DC	661 (corr. to 380 - 415 V input), 765 (corr. to 440 to 480 V input)
Undervoltage trip limits	
Running V DC	333 (corr. to 247 V input)
Start inhibit V DC	436 (corr.to 380 - 415 V input), 505 (corr. to 440 - 480 V input)

Product compliance

Low Voltage Directive 73/23/EEC with supplements

Machinery Directive 98/37/EC

EMC Directive 89/336/EEC with supplements

Quality assurance system ISO 9001 and Environmental system ISO 14001

CE, UL and cUL approvals

EMC (according to EN61800-3)

1st environment restricted distribution with 30 m cable as standard

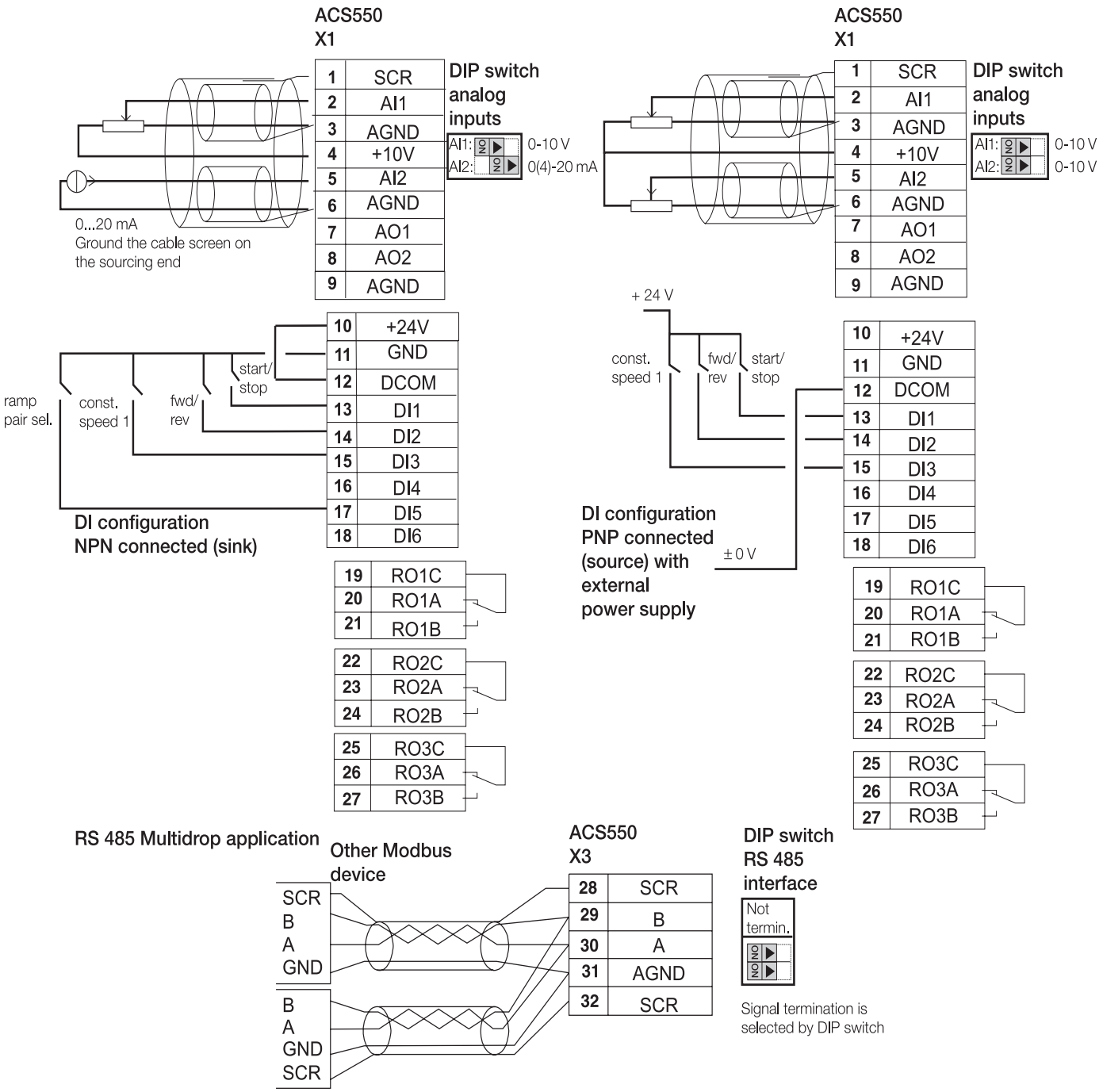
2nd environment unrestricted distribution with 100 m cable as standard

For longer motor cable lengths, external EMC filters are available on request

Control connections

ACS550 - 01 - 03A3 - 4 + B055

These connections are shown as examples only. Please refer to the ACS550 User's Manual, chapter *Installations*, for more detailed information.



Service products

To reduce the total cost of owning ABB drives and to maximize their availability ABB offers the following services:

ABB maintenance services

ABB maintenance services ensure optimal operation of your drives and extends their useful life.

On-site spares kits

On-site spares kits contain the most critical spare parts for your AC drives. The contents of the kit can be chosen according to the number of drives in use. Having a spares kit on site reduces the downtime of equipment and increases the availability of critical processes.

Start-up services

Using ABB's start-up services you can trust that your drives are correctly commissioned and well-tuned to their application. ABB employs authorized professionals who have been thoroughly trained for their job.

Training services

ABB offers dedicated training on ABB drives for your service and operating personnel. Upon successful completion of the training course your personnel will have acquired the skills to use ABB drives correctly and safely, and also to get the best results from their application. The training courses are broken down into modules that allow for customization of the contents depending on the objectives and skill levels of the participants.

ABB has a service organization that spans the globe. Contact your local ABB sales office for more information about our services.

Contact and web information

The ABB Group's philosophy "Think Global, Act Local" means that no matter where you are, or where you need a low voltage AC drive you can simply rely on ABB's worldwide network.

ABB's worldwide presence is built on strong local companies working together with the local distributor and channel partner network across borders to achieve a uniform level of services for all our customers. By combining the experience and know-how gained in local and global markets, we ensure that our customers in all industries can gain the full benefit from our products.

For further details about all our variable speed drive products and services please contact your nearest ABB distributor or visit the ABB website www.abb.com/motors&drives.

For orders, quotations, etc. please contact your local ABB drives distributor, ABB office, or visit the website www.abb.com/drivespartners

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