Low voltage AC drives

ABB micro drives
ACS55
0.25 to 3 hp/0.18 to 2.2 kW
Catalog

Power and productivity
for a better world™

ACS55 IP20
Overview

ACS55 micro drives are designed for use in a wide variety of simple machinery applications where only 115 V single phase power is available. Feed-thru wiring with power leads entering at the top and motor cables exiting at the bottom allows for easy replacement of contactors and motor starters. These drives Improve machine performance with the combined advantages of variable speed control and energy savings for small AC motors.

ACS55 micro drives are compact with multiple mounting positions and options. DIN rail mounting capability makes them ideal for panel builders. The drive is quickly programmed using switches and potentiometers. More advanced programming is possible using the DriveConfig kit PC tool. These drives are readily available as standard products from ABB's worldwide distribution network.

The ACS55 drive is ideal for those situations where a low cost, easy to install, and simple to operate variable frequency drive is needed.

Highlights
- Power range: 0.25 to 3 hp
- 150% peak overload capacity
- Compact and slim design
- Several installation alternatives
- Reduced motor noise with high switching frequency
- Easy configuration using switches and potentiometer
- Fast programming of drives without the need for a power connection
- Available with or without a built-in 1st environment EMC filter as standard
- Optional speed potentiometer and operator control switch kit
- Selectable for linear (constant torque) or squared (variable torque) scalar control.
- RoHS
- Coated boards

Applications
- Pumps and fans
- Conveyors
- Automatic gates
- Solar trackers
- Exercise equipment
- Whirlpools
- Printing and packaging machines
- Food and beverage machines

Feature	Advantage	Benefit
Worldwide availability and service	Drives are available worldwide and stocked in four regions. Dedicated global service and support network that is one of the largest in the industry.	Fast and reliable delivery with dedicated support to any country in the world.
Single phase supply	Suitable for single phase residential and commercial applications.	Avoids cabling and installation costs associated with three-phase supplies.
Slim design	Fits easily into a variety of cabinet designs.	Reduced cabinet size or greater packing density can be achieved.
Several installation alternatives	Can be mounted using screws or DIN-rail side-by-side or sideways.	The same drive type can be used across different designs, saving time and installation costs.
High switching frequency	Reduced motor noise.	Lower disturbance to the building's occupants.
Built-in EMC filter	High degree of electromagnetic compatibility. Category C2 (1st environment) RFI filters as standard.	Low EMC emissions in all environments.
Easy configuration	Quick setup and simple configuration	Substantial time savings. Minimal expertise needed.
DriveConfig kit available as an option	Fast, easy and safe configuration of drives without the need for a power connection. Extended range of application parameter values and more drive functionality. Reliable copying of parameter values from PC to drives.	Substantial time savings. Drive can be configured without an electrician present. Drive suitable for a wide range of applications. Reduced risk of errors during setup.
Wide ambient operating temperature	Drives can be operated in high ambient temperatures up to 55 °C (131 °F) degrees.	One drive series can be used in a wide range of different environmental conditions.

Easily integrated drives for a wide range of applications

ACS55 micro drives bring the benefit of variable speed control to a wide variety of applications such as fans, pumps, material handling systems, a variety of commercial machines and many more.

In automatic gates the drive controls the motor that moves the gate's barrier up and down. The drive provides the barrier with smooth start and stop, thereby reducing maintenance costs. A slim design allows installation of the drive in the restrictive space associated with gate enclosures.

In solar trackers the drive controls the electric motor that turns the solar panel to track the sun. With a wide temperature range up to 55 °C, the drive can be used in environments with diverse ambient temperature. The DriveConfig kit provides a quick and safe way to configure multiple drives for hundreds or even thousands of solar trackers.

In treadmills the drive controls the speed of the motor powering the running belt. The drive offers high torque and accurate speed control throughout the treadmill's speed range providing smooth acceleration and deceleration for the user. Audible noise is reduced through the drive switching at higher frequencies. A built-in 1st environment EMC filter as standard provides low EMC emissions in all environments.

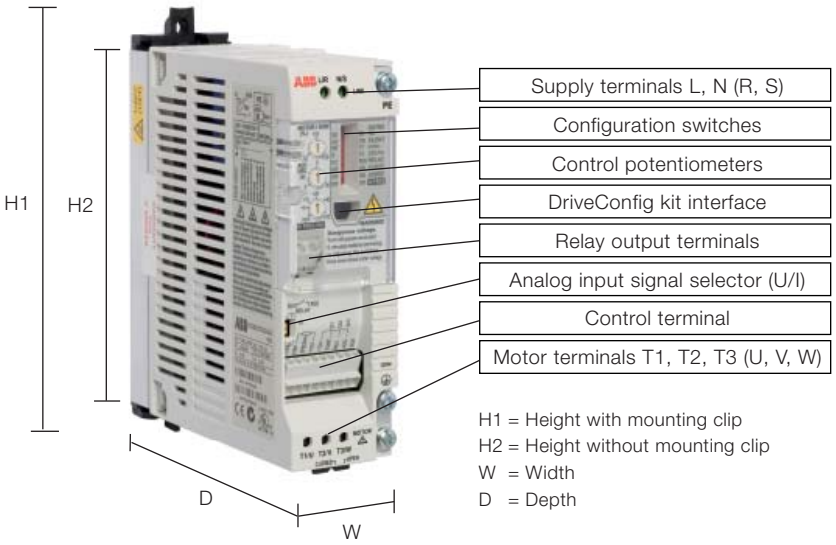
In whirlpool baths the drive controls the pump that generates the pool's water jets. The user controls the start, stop and power of the jets via a user interface connected to the drive's I/O. The drive provides silent operation by using a high switching frequency. The drive's heatsink for cooling enables the drive to be enclosed to a high protection class enclosure.

Ratings, types and voltages

Type designation	P_N	P_N	Output current		Input	Fuse*	Heat	Frame	H1	H2	W	D	Weight
			I_{2N}	Max	current		loss**	size					
	hp	kW	A	A	A	A	W		in (mm)	in (mm)	in (mm)	in (mm)	lbs (kg)
No EMC Filter													
110/120 V, +10/-15%, 1-phase AC supply, 3-phase output 200/240 V													
ACS55-01N-01A4-1	0.25	0.18	1.4	2.1	6.4	10	24	A	6.7 (170)	5.8 (146.5)	1.8 (45)	5.0 (128)	1.4 (0.65)
ACS55-01N-02A2-1	0.5	0.37	2.2	3.3	9.5	16	35	A	6.7 (170)	5.8 (146.5)	1.8 (45)	5.0 (128)	1.5 (0.7)
200/240 V +10/-15%, 1-phase AC supply, 3-phase output 200/240 V													
ACS55-01N-01A4-2	0.25	0.18	1.4	2.1	4.4	10	21	A	6.7 (170)	5.8 (146.5)	1.8 (45)	5.0 (128)	1.4 (0.65)
ACS55-01N-02A2-2	0.5	0.37	2.2	3.3	6.9	16	32	A	6.7 (170)	5.8 (146.5)	1.8 (45)	5.0 (128)	1.5 (0.7)
ACS55-01N-04A3-2	1.0	0.75	4.3	6.5	10.8	16	51	B	6.7 (170)	5.8 (146.5)	2.7 (67.5)	5.0 (128)	2.0 (0.9)
ACS55-01N-07A6-2	2	1.5	7.6	11.4	18.2	25	74	C	7.6 (194)	6.7 (171)	2.8 (70)	6.3 (159)	2.6 (1.2)
ACS55-01N-09A8-2	3	2.2	9.8	14.7	22	32	103	C	7.6 (194)	6.7 (171)	2.8 (70)	6.3 (159)	2.9 (1.3)
Built-in EMC filter													
110/120 V, +10/-15%, 1-phase AC supply, 3-phase output 200/240 V													
ACS55-01E-01A4-1	0.25	0.18	1.4	2.1	6.4	10	24	A	6.7 (170)	5.8 (146.5)	1.8 (45)	5.0 (128)	1.4 (0.65)
ACS55-01E-02A2-1	0.5	0.37	2.2	3.3	9.5	16	35	A	6.7 (170)	5.8 (146.5)	1.8 (45)	5.0 (128)	1.5 (0.7)
200/240 V +10/-15%, 1-phase AC supply, 3-phase output 200/240 V													
ACS55-01E-01A4-2	0.25	0.18	1.4	2.1	4.4	10	21	A	6.7 (170)	5.8 (146.5)	1.8 (45)	5.0 (128)	1.4 (0.65)
ACS55-01E-02A2-2	0.5	0.37	2.2	3.3	6.9	16	32	A	6.7 (170)	5.8 (146.5)	1.8 (45)	5.0 (128)	1.5 (0.7)
ACS55-01E-04A3-2	1.0	0.75	4.3	6.5	10.8	16	51	B	6.7 (170)	5.8 (146.5)	2.7 (67.5)	5.0 (128)	2.0 (0.9)
ACS55-01E-07A6-2	2	1.5	7.6	11.4	18.2	25	74	D	8.9 (226)	8.0 (203)	2.8 (70)	6.3 (159)	3.5 (1.6)
ACS55-01E-09A8-2	3	2.2	9.8	14.7	22	32	103	D	8.9 (226)	8.0 (203)	2.8 (70)	6.3 (159)	3.7 (1.7)

* Recommended values for type Gg fuse. Do not use ultra rapid or low peak fuses. Follow local rules.
** Frame size A & B are convection cooled and must be installed with sufficient spacing.
Frame size C & D are fan cooled and can be installed with no space between them.
Ensure minimum installation space is provided. See ACS55 user's manual for more detailed information.

P_N = Nominal power
I_{2N} = Nominal amps



H1 = Height with mounting clip
H2 = Height without mounting clip
W = Width
D = Depth

Options

DriveConfig kit

The DriveConfig kit is a PC tool for programming and control of ACS55 drives that need more functionality. The kit enables parameter setting and software updating without the need for a power connection. The drives can even remain in their delivery boxes during configuration which means no need for a safe area. The DriveConfig kit features online drive control and monitoring of up to four signals simultaneously. Together with the ACS55 drives series, the DriveConfig kit helps save time by ensuring fast setup, accurate parameter settings and reliable operation.

The DriveConfig kit gives users access to an extended range of application parameter values, which can be used to add drive functionality. Please see the table on the right for the value ranges, functionality and the actual signals enabled by the DriveConfig kit.

The DriveConfig kit includes:

- Hardware and cables
- PC software
- User's manual in English (hardcopy and PDF)
- Battery charger

DriveConfig kit requirements:

- PC with Microsoft Windows 2000/XP/Vista/Windows 7 operating system
- USB port on the PC

Application parameters		
P1105	**Maximum reference**	0 to 250 Hz
P1202	**Constant speed 1**	0 to 250 Hz
P1203	**Constant speed 2**	0 to 250 Hz
P1204	**Constant speed 3**	0 to 250 Hz
P1301	**AI min**	0/1 (0/20%)
P1401	**Relay output**	Fault/Fault (-1)/Run
P2007	**Minimum frequency**	0 to 250 Hz
P2008	**Maximum frequency**	0 to 250 Hz
P2021	**Minimum frequency to modulate**	
P2102	**Stop mode**	Coast/ramp
P2202	**Acceleration time**	0.1 to 100 s
P2203	**Deceleration time**	0.1 to 100 s
P2603	**IR compensation voltage**	0 to 80 V
P2604	**IR compensation frequency**	0 to 250 Hz
P2605	**U/F ratio**	Linear/squared
P2606	**Switching frequency**	5/16 kHz
P3005	**Motor thermal protection**	Enabled/disabled
P3101	**Reset**	Stop, Automatic + stop, No reset
P9902	**Application macro**	ABB Standard, 3-wire, Alternate, Constant speed, Motor potentiometer, Motpot (R)
P9905	**Motor nominal voltage**	110 to 230 V AC
P9906	**Motor nominal current**	50 to 150%
P9907	**Motor nominal frequency**	40 to 250 Hz
P9912	**SW Parameters**	
Actual signals (read only)		
P0102	**Output frequency**	Hz
P0104	**Current**	A
P0107	**DC voltage**	V
P0109	**Output voltage**	V
P0111	**Reference**	Hz
P0160	**DI status**	000/111
P0162	**RO status**	0/1
P0401	**Last fault**	Fault name

Potentiometer

The ACS55-POT potentiometer is an option for the ACS55 drives. Two switches are included in addition to the potentiometer for drive control; start/stop and forward/reverse. The ACS55-POT potentiometer does not require an external power source.

Technical data

Mains connection	
Power range	0.25 to 3 hp (0.18 to 2.2 kW)
Voltage	1-phase, 110 to 120 V and 200 to 240 V, +10/-15%
Frequency	48 to 63 Hz

Motor connection	
Voltage	3-phase, from 0 to U_{SUPPLY} (for 110/120 V from 0 to 230 V)
Frequency	0 to 120/130 Hz, 0 to 250 Hz with DriveConfig kit
Overload capacity	150% (60 s)
Motor control method	Scalar U/f

Application parameters	**As standard**	**With DriveConfig kit**
Motor nominal frequency	50/60 Hz	40 to 250 Hz
Acceleration time	0.1 to 30 s	0.1 to 100 s
Deceleration time	0.1 to 30 s	0.1 to 100 s
Maximum frequency	50 to 120 Hz	0 to 250 Hz
Relay output	Fault/Run	Fault/Fault (-1)/Run
Load type	Pump/fan or constant	
Switching frequency		
Standard	5 kHz, adjustable up to 16 kHz with automatic switching frequency reduction	

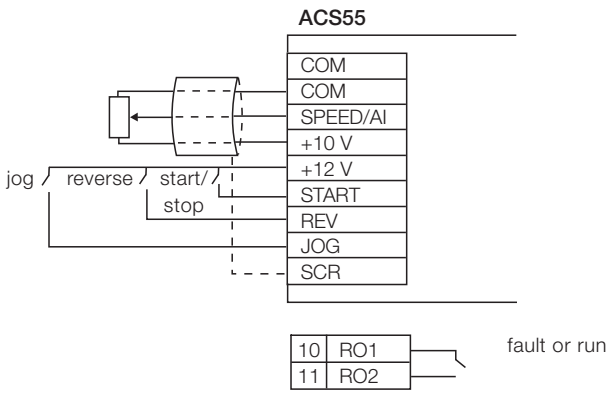
Environmental limits	
Ambient temperature	
-20 to 40 °C (-4 to 104 °F)	With nominal current and 5 kHz switching frequency, no frost allowed
up to 55 °C (131 °F)	With derating
Altitude	
Output current	Nominal current: 0 to 1000 m (0 to 3280 ft) reduced by 1% per 100 m (328 ft) over 1000 m to 2000 m (3280 ft to 6561 ft)
Relative humidity	Lower than 95% (without condensation)
Degree of protection	IP20
Contamination levels	No conductive dust allowed, corrosive liquids or gases (IEC 60721-3-3)

Control connections	
One analog input	
Voltage signal	0 (2) to 10 V, 200 kΩ single-ended
Current signal	0 (4) to 20 mA, 100 Ω single-ended
Potentiometer reference value	10 V ±2% max. 10 mA, 1 kΩ ≤ R ≤ 10 kΩ
Response time	≤ 60 ms
Resolution	0.1%
Accuracy	±1%
Three digital inputs	12 V DC with internal supply or 12 to 24 V DC external supply, PNP
Input impedance	1.5 Ω
Response time	≤ 9 ms
One relay output	
Switching voltage	12 to 250 V AC or max 30 V DC
Maximum continuous current	2 A

Product compliance

Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC
Machinery Directive 2006/42/EC
Quality assurance system ISO 9001 and Environmental system ISO 14001
CE, UL, cUL, C-Tick and GOST R approvals
RoHS compliant

Typical I/O connections



EMC standards in general

EN 61800-3/A11 (2000), product standard	EN 61800-3 (2004), product standard	EN 55011, product family standard for industrial, scientific and medical (ISM) equipment
1st environment, unrestricted distribution	Category C1	Group 1 Class B
1st environment, restricted distribution	Category C2	Group 1 Class A
2nd environment, unrestricted distribution	Category C3	Group 2 Class A
2nd environment, restricted distribution	Category C4	Not applicable

Taking care of your drives, caring about your business

Whether a drive is a part of the product you sell or a component in your production process, reliable and efficient drive operation is key. You will find support from your first meeting with ABB to the drive installation, commissioning and maintenance, all the way up to the eventual drive replacement and recycling. With offices in over 90 countries, we are well placed to offer you technical advice and local support.

Installation and commissioning

We offer accurate advice and timely support before and during installation. ABB-certified engineers or third-party channel companies can adjust the drive parameters to meet the precise demands of the application.

Fast and reliable global delivery and support

ABB drives, spare parts and services are available worldwide and can be purchased through the dedicated global service and support network. More than 1400 companies, located throughout the world and able to serve you locally as well as provide you technical support. These companies include ABB's own offices and authorized third party channel companies.

Check your local ABB contact from **www.abb.com/searchchannels**

Training services

To enhance personnel's product knowledge, and, with that, improve plant safety and availability we offer a selection of on-line courses. Check for more information about ABB's training centers and the courses from **www.abb.com/abbuniversity**.

Contact us

For more information please contact your local ABB representative or visit:

www.abb.com/drives

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