



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 1<sup>st</sup> 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 (1 <sup>st</sup> 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 1<sup>st</sup> 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	$P_N$ hp	$P_N$ kW	Output current		Input current A	Fuse* A	Heat loss** W	Frame size	H1 in (mm)	H2 in (mm)	W in (mm)	D in (mm)	Weight lbs (kg)
			$I_{2N}$ A	Max A									
<b>No EMC Filter</b>													
<b>110/120 V, +10/-15%, 1-phase AC supply, 3-phase output 200/240 V</b>													
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)
<b>200/240 V +10/-15%, 1-phase AC supply, 3-phase output 200/240 V</b>													
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)
<b>Built-in EMC filter</b>													
<b>110/120 V, +10/-15%, 1-phase AC supply, 3-phase output 200/240 V</b>													
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)
<b>200/240 V +10/-15%, 1-phase AC supply, 3-phase output 200/240 V</b>													
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.

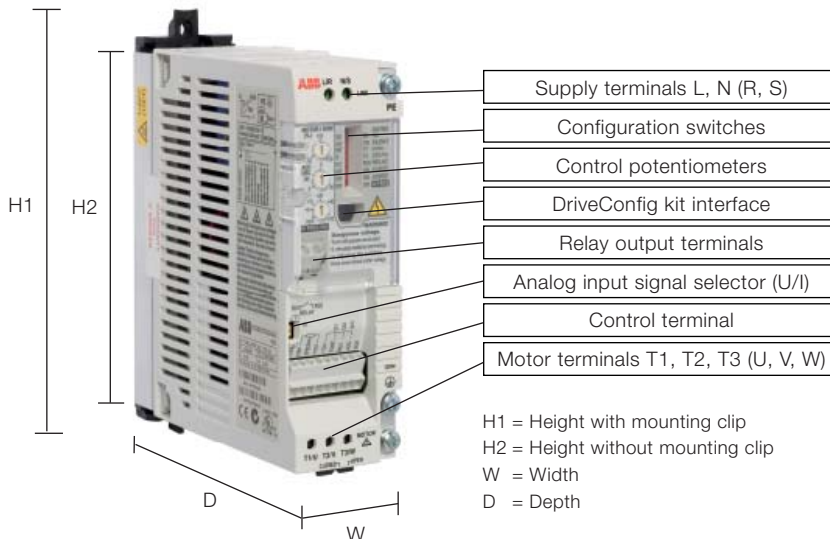
\*\* Frame size A & B are convection cooled and must be installed with sufficient spacing.

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



# 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.

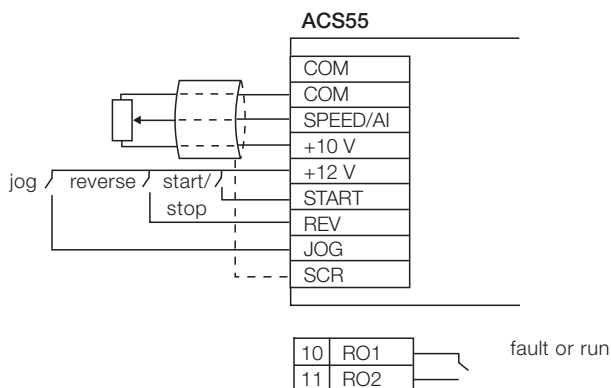




# Technical data

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)	

## Typical I/O connections



Control connections	
One analog input	
Voltage signal	0 (2) to 10 V, 200 k $\Omega$ single-ended
Current signal	0 (4) to 20 mA, 100 $\Omega$ single-ended
Potentiometer reference value	10 V $\pm$ 2% max. 10 mA, 1 k $\Omega$ $\leq$ R $\leq$ 10 k $\Omega$
Response time	$\leq$ 60 ms
Resolution	0.1%
Accuracy	$\pm$ 1%
Three digital inputs	
	12 V DC with internal supply or 12 to 24 V DC external supply, PNP
Input impedance	1.5 $\Omega$
Response time	$\leq$ 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	

## 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
1 <sup>st</sup> environment, unrestricted distribution	Category C1	Group 1 Class B
1 <sup>st</sup> environment, restricted distribution	Category C2	Group 1 Class A
2 <sup>nd</sup> environment, unrestricted distribution	Category C3	Group 2 Class A
2 <sup>nd</sup> 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](http://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](http://www.abb.com/abbuniversity).

# Contact us

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

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

© Copyright 2014 ABB. All rights reserved.  
Specifications subject to change without notice.

3AUA0000163005 REV F US 19.5.2014 #17130

Power and productivity  
for a better world™

