ABB component drives

ACS50/ACS150 replaces ACS100

Replacement guide

Contents

Using the replacement guide

This guide will help you to replace the component drives, ACS100 with the ACS50 or ACS150. Follow the steps outlined in this guide to find the optimal replacement product and to speed up the replacement process.

Step 1: selection of the product series

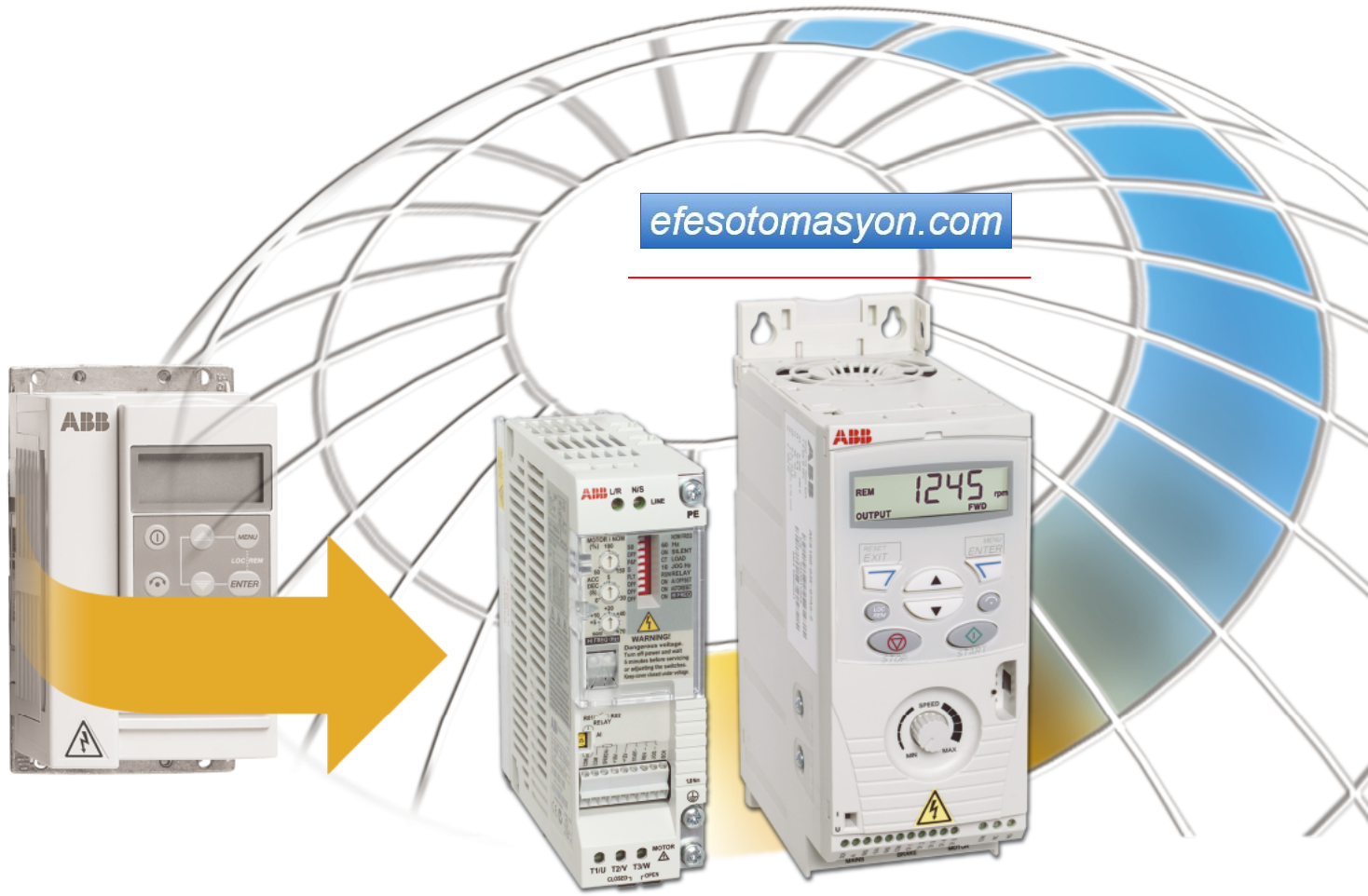
Compare the specifications and features to select between ACS50 and ACS150 product series.

Step 2: sizing of the drive

Compare current ratings and dimensions to select the correct ACS50 or ACS150 drive product.

Step 3: wiring and parameter set-up

ACS100, ACS50 and ACS150 wiring and parameter set-up comparison tables.



Step 1: selection of the product series

Specifications

	Specifications		ACS100	ACS50	ACS150
Input	Input voltages		1-phase 200 to 240 V 3-phase 200 to 240 V	1-phase 100 to 120 V 1-phase 200 to 240 V	1-phase 200 to 240 V 3-phase 200 to 240 V 3-phase 380 to 480 V
	Input power factor		0.98	0.98	0.98
	Input choke		AC chokes as an external option	AC chokes as an external option	AC chokes as an external option
	Input voltage tolerance		±10%	±10%	±10%
	Input frequency tolerance		48 to 63 Hz	48 to 63 Hz	48 to 63 Hz
Output	Power ratings	100 to 120 V 1-phase 200 to 240 V 1-phase 200 to 240 V 3-phase 380 to 480 V 3-phase	0.12 to 2.2 kW (1/6 to 3 hp) 0.37 to 2.2 kW (1/2 to 3 hp)	0.18 to 0.37 kW (0.25 to 0.5 hp) 0.18 to 2.2 kW (0.25 to 3 hp)	0.37 to 2.2 kW (1/2 to 3 hp) 0.37 to 2.2 kW (1/2 to 3 hp) 0.37 to 4.0 kW (1/2 to 5 hp)
	Overload capacity	1 Minute Short term	150% N/A	150% N/A	150% 180% / 2 sec.
	Output frequency		0 to 300 Hz	0 to 120/130 Hz	0 to 500 Hz
	Switching frequency		4 kHz 4 to 16 kHz with 4 kHz steps	5 kHz 5 to 16 kHz	4 kHz 4 to 16 kHz with 4 kHz steps
Environmental limits	Degree of protection		IP20, NEMA 1 optional	IP20	IP20, NEMA 1 optional
	Ambient temperature	Operating	0 to 40°C (32° to 104°F) up to 50°C (122°F) derate 1%/1°C	0 to 40°C (14° to 104°F) up to 50°C (122°F) derate 1%/1°C	-10 to 40°C (14° to 104°F) up to 50°C (122°F) derate 1%/1°C
	Humidity	Non-condensing	95%	95%	95%
	Altitude	Without derate	0 to 1000 m (0 to 3280 ft)	0 to 1000 m (0 to 3280 ft)	0 to 1000 m (0 to 3280 ft)
Protections		Short circuit	Yes	Yes	Yes
		Over current	Yes	Yes	Yes
		Over voltage	Yes	Yes	Yes
		Under voltage	Yes	Yes	Yes
		Motor overload	Yes	Yes	Yes
		Input phase loss	Yes	No	Yes
		Output phase loss	No	No	Yes
		Earth fault	Yes	No	Yes
Approvals	UL		Yes	Yes	Yes
	cUL		Yes	Yes	Yes
	CE		Yes	Yes	Yes
	C-TICK		Yes	Yes	Yes
	GOST R		Yes	Yes	Yes

= ACS50 / ACS150 specification offers more than ACS100.

= ACS50 / ACS150 specification is different from ACS100.

Step 1: selection of the product series

Feature

	Feature	ACS100	ACS50	ACS150
I/O	DC power source	12 V DC, 100 mA	12 V DC, 30 mA	24 V DC, 200 mA
	Digital inputs	(5) 12 to 24 V DC	(3) 12 to 24 V DC	(5) 12 to 24 V DC
	Digital pulse train input	No	No	0 to 16 kHz
	Digital outputs	(1) Form C relays	(1) Form C relay	(1) Form C relay
	Digital pulse train output	No	No	No
	+10 V DC supply for potentiometer	Yes	Yes	No
	Analog inputs	(1) Unipolar 0 to 10 V or 0 to 20 mA	(1) Unipolar 0 to 10 V or 0 to 20 mA	(1) Unipolar 0 to 10 V or 0 to 20 mA
	Analog outputs	No	No	No
Interfaces	Local LCD	Yes	No	Yes
	Remote LCD	Yes	No	No
	Parameter copy	Yes	No	Yes (with FlashDrop)
	Potentiometer	No	Option	Yes
Software features	Acceleration and deceleration rates	0.1 to 1800 s	0.1 to 30 s	0.1 to 1800 s
	Torque control	No	No	No
	S-curve	Yes	No	Yes
	Preset speeds	1	1 (5/10Hz)	7
	Skip frequencies	0	0	3
	DC braking	Yes	No	Yes
	Flying start	No	No	Yes
	Overvoltage controller	Yes	Yes	Yes
	Current limit	Yes	Yes	Yes
	Drive overload protection	Yes	Yes	Yes
	Auto restart	Yes	Yes	Yes
	Auto fault reset	Yes	Yes	Yes
	Emergency stop mode	No	No	Yes
	Jog	No	No	Yes
Options	EMC filtering	External option	1st environment filter complying with IEC 61800-3 as standard	2nd environment filter complying with IEC 61800-3 as standard
	Flange mounting capability	As standard	No	No
	Inbuilt brake chopper	No	No	As standard

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Step 1: selection of the product series

Feature comparison summary

ACS50 vs. ACS100

Additional in ACS50:

- Inbuilt EMC filter
- Switching frequency control
- Potentiometer option

Not provided in ACS50

- Flange mounting
- Removable control panel
- DC terminals

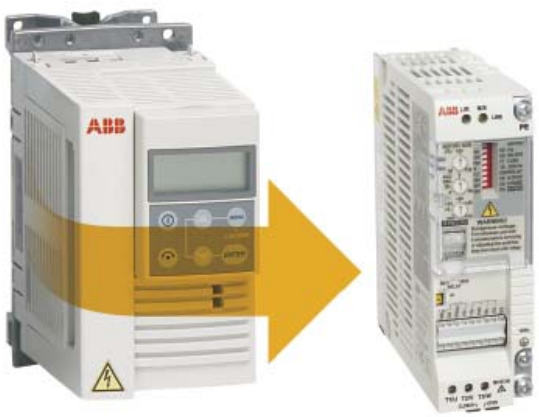
ACS150 vs. ACS100

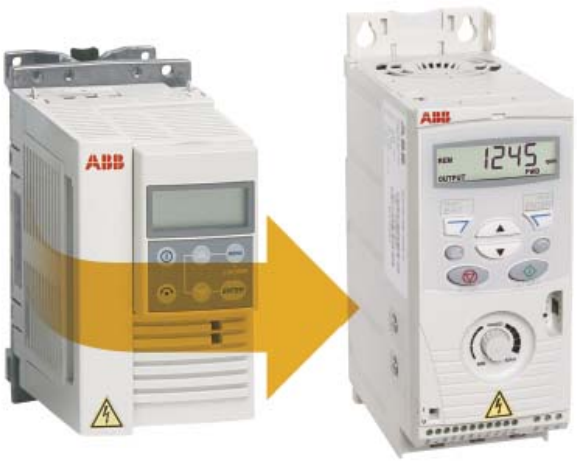
Additional in ACS150:

- Inbuilt brake chopper
- Inbuilt EMC filter
- FlashDrop
- Pulse train input
- Changed parameters menu
- Emergency stop
- Jog function
- Max frequency 500 Hz
- Zero speed delay
- Three critical frequencies
- Switching frequency control
- Integral potentiometer
- Power range up to 4 kW (5 hp)
- Backlight display

Not provided in ACS150

- Flange mounting
- Removable control panel
- DC terminals
- Reference voltage 10 V DC





Step 2: sizing of the drive

kW	Drive	Type code	Current rating I_{2N}	Dimensions		
				H (mm)	W (mm)	D (mm)
1-phase, 200 to 240 V units						
0.12	ACS100	ACS101-K18-1	1.0	146	80	149
	ACS50	ACS50-01E-01A4-2	1.4	146,5	45	128
	ACS150	ACS150-01X-02A4-2	2.4	202	70	142
0.18	ACS100	ACS101-K25-1	1.4	146	80	149
	ACS50	ACS50-01E-01A4-2	1.4	146,5	45	128
	ACS150	ACS150-01X-02A4-2	2.4	202	70	142
0.25	ACS100	ACS101-K37-1	1.7	146	80	149
	ACS50	ACS50-01E-02A2-2	2.2	146,5	45	128
	ACS150	ACS150-01X-02A4-2	2.4	202	70	142
0.37	ACS100	ACS101-K75-1	2.2	146	80	149
	ACS50	ACS50-01E-02A2-2	2.2	146,5	45	128
	ACS150	ACS150-01X-02A4-2	2.4	202	70	142
0.55	ACS100	ACS101-1K1-1	3.0	146	80	149
	ACS50	ACS50-01E-04A3-2	4.3	146,5	67,5	128
	ACS150	ACS150-01X-04A7-2	4.7	202	70	142
0.75	ACS100	ACS101-1K6-1	4.3	146	80	186
	ACS50	ACS50-01E-04A3-2	4.3	146,5	67,5	128
	ACS150	ACS150-01X-04A7-2	4.7	202	70	142
1.1	ACS100	ACS101-2K1-1	5.9	218	80	169
	ACS50	ACS50-01E-07A6-2	7.6	203	70	159
	ACS150	ACS150-01X-06A7-2	6.7	202	70	142
1.5	ACS100	ACS101-2K7-1	7.0	218	80	169
	ACS50	ACS50-01E-07A6-2	7.6	203	70	159
	ACS150	ACS150-01X-07A5-2	7.5	202	105	142
2.2	ACS100	ACS101-4K1-1	9.0	245	80	176
	ACS50	ACS50-01E-09A8-2	9.8	203	70	159
	ACS150	ACS150-01X-09A8-2	9.8	202	105	142
3-phase, 200 to 240 V units						
0.37	ACS100	ACS103-K75-1	2.2	146	80	149
	ACS150	ACS150-03X-02A4-2	2.4	202	70	142
0.55	ACS100	ACS103-1K1-1	3.0	146	80	149
	ACS150	ACS150-03X-03A5-2	3.5	202	70	142
0.75	ACS100	ACS103-1K6-1	4.3	146	80	186
	ACS150	ACS150-03X-04A7-2	4.7	202	70	142
1.1	ACS100	ACS103-2K1-1	5.9	218	80	169
	ACS150	ACS150-03X-06A7-2	6.7	202	70	142
1.5	ACS100	ACS103-2K7-1	7.0	218	80	169
	ACS150	ACS150-03X-07A5-2	7.5	202	70	142
2.2	ACS100	ACS103-4K1-1	9.0	245	80	176
	ACS150	ACS150-03X-09A8-2	9.8	202	105	142
3-phase, 380 to 480 V units						
0.37	ACS150	ACS150-03X-01A2-4	1.2	202	70	142
0.55	ACS150	ACS150-03X-01A9-4	1.9	202	70	142
0.75	ACS150	ACS150-03X-02A4-4	2.4	202	70	142
1.1	ACS150	ACS150-03X-03A3-4	3.3	202	70	142
1.5	ACS150	ACS150-03X-04A1-4	4.1	202	70	142
2.2	ACS150	ACS150-03X-05A6-4	5.6	202	70	142
3	ACS150	ACS150-03X-07A3-4	7.3	202	70	142
4	ACS150	ACS150-03X-08A8-4	8.8	202	70	142

= ACS50 or ACS150 is smaller than ACS100.

= ACS50 or ACS150 is bigger than ACS100.

Step 3: wiring

Control terminals

Function	ACS100	ACS50	ACS150
SCR	1	9	1
Analogue input 1	2 (0-10 V)	(0 (2)-10 V / 0 (4)-20 mA)	(0 (2)-10 V / 0 (4)-20 mA)
AGND	3	1/2	3
10V DC	4	4	N/A
Analogue input 2	5 (0 (4)-20 mA)	N/A	N/A
AGND	6	1/2	5
AGND	7	1/2	5
12 V DC	8 (12 V DC, 100 mA)	5 (12 V DC, 30 mA)	4 (24 V DC, 200 mA)
DCOM	9	1/2	6
Digital input 1	10	6 (Start)	7
Digital input 2	11	7 (Rev)	8
Digital input 3	12	8 (Jog)	9
Digital input 4	N/A	N/A	10
Digital input 5	N/A	N/A	11
Relay output 1 - common	13	RO1	12
Relay output 1 - N.C.	14	N/N	13
Relay output 1 - N.O.	15	RO2	14

Power terminals

Function	ACS100	ACS50	ACS150
AC line input	U1/L	L/R	U1/L
	V1/N	N/S	V1/N
	W1	N/A	W1
Positive DC bus	Uc+	N/A	N/A
Negative DC bus	Uc-	N/A	N/A
Braking chopper	N/A	N/A	BRK+
Braking chopper	N/A	N/A	BRK1-
Motor output	U2	T1/U	U2
	V2	T2/V	V2
	W2	T3/W	W2

= ACS50 / ACS150 specification offers more than ACS100.

= ACS50 / ACS150 specification is different from ACS100.

Step 3: parameter set-up

ACS100				ACS150			
Par.#	**Parameter name**	**Description**	**Default**	**Par.#**	**Parameter name**	**Description**	**Default**
102	LAST FAULT	Fault memory. 0 = no fault in memory		**0401**	LAST FAULT	Fault code of the latest fault. See chapter Fault tracing for the codes. 0 = Fault history is clear	
103	VERSION	Software version number		**3301**	FW VERSION	Displays the version of the firmware package	
201	NOM VOLT	Defines the nominal motor voltage	230 V	**9905**	MOTOR NOM VOLT	Defines the nominal motor voltage	230 V 400 V
202	NOM FREQ	Defines the motor nominal frequency	50 Hz	**9907**	MOTOR NOM FREQ	Defines the motor nominal frequency	50 Hz
203	NOM CURR	Defines the motor nominal current	I_2	**9906**	MOTOR NOM CURR	Defines the motor nominal current	1.0 * I_{2N}
204	NOM SPEED	0 to 3600 rpm	1440 rpm	**9908**	MOTOR NOM SPEED	50 to 30000 rpm	Type dependent
205	MAX CURR	Defines the allowed maximum motor current	1.5 * I_2	**2003**	MAX CURRENT	Defines the allowed maximum motor current	1.8 * I_{2N}
206	MAX FREQ	Range: 0 to 300 Hz	50 Hz	**2008**	MAXIMUM FREQ	Range: 0 to 500 Hz	50 Hz
208	DIR LOCK	1 = FWD / REV 2 = FWD only	1	**1003**	DIRECTION	1 = FORWARD 2 = REVERSE 3 = REQUEST	3
301	STOP	1 = Coast 2 = Ramp	1	**2102**	STOP FUNCTION	1 = COAST 2 = RAMP	1
303	ACC	Range: 0.1 to 1800 s	5.0 s	**2202**	ACCELER TIME 1	Range: 0.0 to 1800 s	5.0 s
304	DEC	Range: 0.1 to 1800 s	5.0 s	**2203**	DECELER TIME 1	Range: 0.0 to 1800 s	5.0 s
305	U/F RATIO	1 = LINEAR 2 = SQUARE	1	**2605**	U/F RATIO	1 = LINEAR 2 = SQUARE	1
401	AI MIN	Relative minimum value of AI1%	0%	**1301**	MINIMUM AI1	Relative minimum value of AI1%	0%
404	REF MAX	Range: 0 to 300 Hz	50 Hz	**1105**	REF1 MAX	Range: 0 to 500 Hz	50 Hz
406	Const Speed	Range: 0 to 300 Hz	5 Hz	**1202**	CONST SPEED 1	Range: 0 to 500 Hz	5 Hz

= ACS150 specification offers more than ACS100.

= ACS150 specification is different from ACS100.

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