ABB component drives
ACS150 replaces ACS140
ABB general machinery drives
ACS350 replaces ACS140

Replacement guide

Contents

Using the replacement guide

This guide will help you to replace the general machinery drives, ACS140 with the component drives, ACS150 or general machinery drives, ACS350. 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 ACS150 and ACS350 product series.

Step 2: sizing of the drive

Compare current ratings and dimensions to select the correct ACS150 or ACS350 drive product.

Step 3: wiring and parameter set-up

ACS140, ACS150 and ACS350 wiring and parameter set-up comparison tables.

Step 1: selection of the product series

Specifications

	Specifications		ACS140	ACS150	ACS350
Input	Input voltages		1-phase 200 to 240 V 3-phase 200 to 240 V 3-phase 380 to 480 V	1-phase 200 to 240 V 3-phase 200 to 240 V 3-phase 380 to 480 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	200 to 240 V 1-phase	0.12 to 2.2 kW (1/6 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)
		200 to 240 V 3-phase	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)
		380 to 480 V 3-phase	0.37 to 2.2 kW (1/2 to 3 hp)	0.37 to 4.0 kW (1/2 to 5 hp)	0.37 to 7.5 kW (1/2 to 10 hp)
	Overload capacity	1 Minute	150%	150%	150%
		Short term	N/A	180% / 2 sec	180% / 2 sec.
	Output frequency		0 to 300 Hz	0 to 500 Hz	0 to 500 Hz
	Switching frequency		4 kHz 4 to 16 kHz with 4 kHz steps	4 kHz 4 to 16 kHz with 4 kHz steps	4 kHz 4 to 16 kHz with 4 kHz steps
Evnironmental limits	Degree of protection		IP20, NEMA 1 optional	IP20, NEMA 1 optional	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	-10 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	Yes	Yes
		Output phase loss	No	Yes	Yes
		Earth fault	Yes	Yes	Yes
Approvals	UL		Yes	Yes	Yes
	cUL		Yes	Yes	Yes
	CE		Yes	Yes	Yes
	C-TICK		Yes	Yes	Yes
	GOST R		Yes	Yes	Yes

= ACS150 / ACS350 specification offers more than ACS140.

= ACS150 / ACS350 specification is different from ACS140.

Step 1: selection of the product series

Feature

	Feature	ACS140	ACS150	ACS350
I/O	DC power source	12 V DC, 100 mA	24 V DC, 200 mA	24 V DC, 200 mA
	Digital inputs	(5) 12 to 24 V DC	(5) 12 to 24 V DC	(5) 12 to 24 V DC
	Digital pulse train input	No	0 to 16 kHz	0 to 16 kHz
	Digital outputs	(2) Form C relays	(1) Form C relay	(1) Form C relay, (1) Transistor output
	Digital pulse train output	No	No	10 to 16 kHz
	+10 V DC supply for pot	Yes	No	Yes
	Analog inputs	(2) Unipolar 0 to 10 V or 0 to 20 mA	(1) Unipolar 0 to 10 V or 0 to 20 mA	(2) Unipolar or bipolar 0 to 10 V or 0 to 20 mA
	Analog outputs	(1) 0 to 20 mA	No	(1) 0 to 20 mA
Fieldbus	Modbus	Option	No	Option
	DeviceNet	No	No	Option
	PROFIBUS DP	No	No	Option
	CANopen	No	No	Option
Interfaces	Local LCD	Yes	Yes	Basic or assistan panel
	Remote LCD	Yes	No	Basic or assistan panel
	Parameter copy	Yes	No	Yes
	LCD languages	No	No	With assitant panel
	Start-up assistant	No	No	With assitant panel
	Diagnostic assistant	No	No	With assitant panel
	Real time clock	No	No	With assitant panel
	Soft keys	No	No	With assitant panel
	Help function	No	No	With assitant panel
Software features	Acceleration and deceleration rates	0.1 to 1800 s	0.1 to 1800 s	0.1 to 1800 s
	Torque control	No	No	Yes
	S-curve	Yes	Yes	Yes
	Preset speeds	7	7	7
	Skip frequencies	2	3	3
	DC braking	Yes	Yes	Yes
	Flying start	Yes	Yes	Yes
	Overvoltage controller	Yes	Yes	Yes
	Maintenance triggers	No	No	Yes
	Current limit	Yes	Yes	Yes
	Drive overload protection	Yes	Yes	Yes
	Auto restart	Yes	Yes	Yes
	Auto fault reset	Yes	Yes	Yes
	Daily/Weekly timers	No	No	With assitant panel
	Encoder feedback	No	No	With encoder option
	User parameter sets	No	No	3
	Emergency stop mode	No	Yes	Yes
	Jog	No	Yes	Yes
	Flux braking	No	No	Yes
	PID loops	1	No	2
	Sleep / Wake	Yes	No	Yes
Options	EMC filtering	External option	2nd 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	As standard	As standard

= ACS150 / ACS350 specification offers more than ACS140.

= ACS150 / ACS350 specification is different from ACS140.

Step 1: selection of the product series

Feature comparison summary

ACS150 vs. ACS140

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
- Third critical frequency
- Switching frequency control
- Integral potentiometer
- Power range up to 4 kW (5 hp)
- Backlight display

Not provided in ACS150

- Serial communication
- PID
- Flange mounting
- Removable control panel
- Analog output
- Second relay output
- Second analog input
- Reference voltage 10 V DC
- DC terminals
- DriveWindow Light 2

ACS350 vs. ACS140

Additional in ACS350:

- Inbuilt brake chopper
- Inbuilt EMC filter
- FlashDrop
- Pulse train input
- Pulse train output
- Changed parameters menu
- Emergency stop
- Jog function
- Max frequency 500 Hz
- Zero speed delay
- Third critical frequency
- Switching frequency control
- Power range up to 7.5 kW (10 hp)
- Maintenance triggers
- Daily and weekly timers
- Sequency programming
- Multiple plug-in fieldbuses
- Bipolar analog input
- Vector control open/closed
- Assistant control panel (optional)

Not provided in ACS350

- Flange mounting
- Second relay output replaced with transistor output
- DC terminals

Step 2: sizing of the drive

kW	Drive	Type code	Current rating	Dimensions		
				H (mm)	W (mm)	D (mm)
1-phase, 200 to 240 V units						
0.12	ACS140	ACS141-K18-1	1	146	80	149
	ACS150	ACS150-01X-02A4-2	2.4	202	70	142
	ACS350	ACS350-01X-02A4-2	2.4	202	70	161
0.18	ACS140	ACS141-K25-1	1.4	146	80	149
	ACS150	ACS150-01X-02A4-2	2.4	202	70	142
	ACS350	ACS350-01X-02A4-2	2.4	202	70	161
0.25	ACS140	ACS141-K37-1	1.7	146	80	149
	ACS150	ACS150-01X-02A4-2	2.4	202	70	142
	ACS350	ACS350-01X-02A4-2	2.4	202	70	161
0.37	ACS140	ACS141-K75-1	2.2	146	80	149
	ACS150	ACS150-01X-02A4-2	2.4	202	70	142
	ACS350	ACS350-01X-02A4-2	2.4	202	70	161
0.55	ACS140	ACS141-1K1-1	3	146	80	149
	ACS150	ACS150-01X-04A7-2	4.7	202	70	142
	ACS350	ACS350-01X-04A7-2	4.7	202	70	161
0.75	ACS140	ACS141-1K6-1	4.3	146	80	186
	ACS150	ACS150-01X-04A7-2	4.7	202	70	142
	ACS350	ACS350-01X-04A7-2	4.7	202	70	161
1.1	ACS140	ACS141-2K1-1	5.9	218	80	169
	ACS150	ACS150-01X-06A7-2	6.7	202	70	142
	ACS350	ACS350-01X-06A7-2	6.7	202	70	161
1.5	ACS140	ACS141-2K7-1	7	218	80	169
	ACS150	ACS150-01X-07A5-2	7.5	202	105	142
	ACS350	ACS350-01X-07A5-2	7.5	202	105	165
2.2	ACS140	ACS141-4K1-1	9	245	80	176
	ACS150	ACS150-01X-09A8-2	9.8	202	105	142
	ACS350	ACS350-01X-09A8-2	9.8	202	105	165
3-phase, 200 to 240 V units						
0.37	ACS140	ACS143-K75-1	2.2	146	80	149
	ACS150	ACS150-03X-02A4-2	2.4	202	70	142
	ACS350	ACS350-03X-02A4-2	2.4	202	70	161
0.55	ACS140	ACS143-1K1-1	3	146	80	149
	ACS150	ACS150-03X-03A5-2	3.5	202	70	142
	ACS350	ACS350-03X-03A5-2	3.5	202	70	161
0.75	ACS140	ACS143-1K6-1	4.3	146	80	186
	ACS150	ACS150-03X-04A7-2	4.7	202	70	142
	ACS350	ACS350-03X-04A7-2	4.7	202	70	161
1.1	ACS140	ACS143-2K1-1	5.9	218	80	169
	ACS150	ACS150-03X-06A7-2	6.7	202	70	142
	ACS350	ACS350-03X-06A7-2	6.7	202	70	161
1.5	ACS140	ACS143-2K7-1	7	218	80	169
	ACS150	ACS150-03X-07A5-2	7.5	202	70	142
	ACS350	ACS350-03X-07A5-2	7.5	202	70	161
2.2	ACS140	ACS143-4K1-1	9	245	80	176
	ACS150	ACS150-03X-09A8-2	9.8	202	105	142
	ACS350	ACS350-03X-09A8-2	9.8	202	105	161
3	ACS140	N/A				
	ACS150	N/A				
	ACS350	ACS350-03X-13A6-2	9.8	202	105	169
4	ACS140	N/A				
	ACS150	N/A				
	ACS350	ACS350-03X-17A6-2	17.6	202	105	169

= ACS150 or ACS350 is smaller than ACS140.

= ACS150 or ACS350 is bigger than ACS140.

Step 2: sizing of the drive

kW	Drive	Type code	Current rating	Dimensions		
				H (mm)	W (mm)	D (mm)
3-phase, 380 to 480 V units						
0.37	ACS140	ACS143-K75-3	1.2	146	80	149
	ACS150	ACS150-03X-01A2-4	1.2	202	70	142
	ACS350	ACS350-03X-01A2-4	1.2	202	70	161
0.55	ACS140	ACS143-1K1-3	1.7	146	80	149
	ACS150	ACS150-03X-01A9-4	1.9	202	70	142
	ACS350	ACS350-03X-01A9-4	1.9	202	70	161
0.75	ACS140	ACS143-1K6-3	2	146	80	186
	ACS150	ACS150-03X-02A4-4	2.4	202	70	142
	ACS350	ACS350-03X-02A4-4	2.4	202	70	161
1.1	ACS140	ACS143-2K1-3	2.8	218	80	169
	ACS150	ACS150-03X-03A3-4	3.3	202	70	142
	ACS350	ACS350-03X-03A3-4	3.3	202	70	161
1.5	ACS140	ACS143-2K7-3	3.6	218	80	169
	ACS150	ACS150-03X-04A1-4	4.1	202	70	142
	ACS350	ACS350-03X-04A1-4	4.1	202	70	161
2.2	ACS140	ACS143-4K1-3	4.9	245	80	176
	ACS150	ACS150-03X-05A6-4	5.6	202	70	142
	ACS350	ACS350-03X-05A6-4	5.6	202	70	161
3	ACS140	N/A				
	ACS150	ACS150-03X-07A3-4	7.3	202	70	142
	ACS350	ACS350-03X-07A3-4	7.3	202	70	161
4	ACS140	N/A				
	ACS150	ACS150-03X-08A8-4	8.8	202	70	142
	ACS350	ACS350-03X-08A8-4	8.8	202	70	161
5.5	ACS140	N/A				
	ACS150	N/A				
	ACS350	ACS350-03X-12A5-4	12.5	202	169	169
7.5	ACS140	N/A				
	ACS150	N/A				
	ACS350	ACS350-03X-15A6-4	15.6	202	169	169

= ACS150 or ACS350 is smaller than ACS140.

= ACS150 or ACS350 is bigger than ACS140.

Step 3: wiring

Control terminals

Function	ACS140	ACS150	ACS350
Shield grounding point	1	1	1
Analog input 1 0 to 10 V or 0 to 20 mA	2	2	2
Analog COMMON	3	3	3
+10 V DC supply for POT	4	N/A	4
Analog input 2 0 to 10 V or 0 to 20 mA	5	N/A	5
Analog COMMON	6	N/A	6
Analog output 1 0 to 10 V or 0 to 20 mA	7	N/A	7
Analog COMMON	8	N/A	8
DC power source	9 (12 V DC, 100 mA)	4 (24 V DC, 200 mA)	9 (24 V DC, 200 mA)
Analog COMMON	N/A	5	10
Digital input common	10	6	11
Digital input 1	11	7	12
Digital input 2	12	8	13
Digital input 3	13	9	14
Digital input 4	14	10	15
Digital input 5	15	11	16
Relay output 1 - Common	16	12	17
Relay output 1 - N.C.	N/A	13	18
Relay output 1 - N.O.	17	14	19
Relay output 2 - Common	18	N/A	N/A
Relay output 2 - N.C.	N/A	N/A	N/A
Relay output 2 - N.O.	19	N/A	N/A
Shield grounding point	N/A	N/A	20
Digital output	N/A	N/A	21
Digital ground	N/A	N/A	22

Power terminals

Function	ACS140	ACS150	ACS350
AC line input	U1/L	U1/L	U1/L
	V1/N	V1/N	V1/N
	W1	W1	W1
Positive DC bus	Uc+	N/A	N/A
Negative DC bus	Uc-	N/A	N/A
Braking resistor	N/A	BRK+	BRK+
Braking resistor	N/A	BRK-	BRK-
Motor output	U2	U2	U2
	V2	V2	V2
	W2	W2	W2

= ACS150 / ACS350 specification offers more than ACS140.

= ACS150 / ACS350 specification is different from ACS140.

Step 3: parameter set-up

ACS140 Basic parameters				ACS150		
Par.#	Parameter name	Description	Default	Par.#	Parameter name	Description
9902	APPLIC MACRO	0 = FACTORY MACRO 1 = ABB STANDARD 2 = 3-WIRE 3 = ALTERNATE 4 = MOTOR POT 5 = HAND/AUTO 6 = PID CONTROL 7 = PREMAGN	0	9902	APPLIC MACRO	1 = ABB STANDAR 2 = 3-WIRE 3 = ALTERNATE 4 = MOTOR POT 5 = HAND/AUTO
9905	MOTOR NOM VOLT	Defines the nominal motor voltage	230 V 460 V	9905	MOTOR NOM VOLT	Defines the nomina
9906	MOTOR NOM CURR	Defines the motor nominal current	$1.0*I_{2hd}$	9906	MOTOR NOM CURR	Defines the motor
9907	MOTOR NOM FREQ	Defines the nominal motor frequency	60 Hz	9907	MOTOR NOM FREQ	Defines the nomina
9908	MOTOR NOM SPEED	Range 0 to 3600 rpm	1750	9908	MOTOR NOM SPEED	50 to 30000 rpm
0128	LAST FAULT	Last recorded fault (0 = no fault). See “Diagnostics” starting on page 75. Can be cleared with the control panel by pressing the UP and DOWN buttons simultaneously when in parameter set mode.		0401	LAST FAULT	Fault code of the la the codes. 0 = Fault history is
1003	DIRECTION	1 = FORWARD 2 = REVERSE 3 = REQUEST	3	1003	DIRECTION	1 = FORWARD 2 = REVERSE 3 = REQUEST
1105	EXT REF1 MAX	Range: 0 to 300 Hz	60 Hz	1105	REF1 MAX	0.0… to 500.0 Hz
1202 1203 1204	CONST SPEED 1 CONST SPEED 2 CONST SPEED 3	0 to 300 Hz 0 to 300 Hz 0 to 300 Hz	5 Hz 10 Hz 15 Hz	1202 1203 1204	CONST SPEED 1 CONST SPEED 2 CONST SPEED 3	0.0… to 500.0 Hz 0.0… to 500.0 Hz 0.0… to 500.0 Hz
1301	MINIMUM AI1	Relative minimum value of AI1%	0%	1301	MINIMUM AI1	Relative minimum
1503	AO CONTENT MAX	Analog output content maximum			N/A	N/A
2003	MAX CURRENT	Range: $0.5* I_N$ to $1.5* I_N$, where I_N is nominal current of the ACS140	$1.5 * I_N$	2003	MAX CURRENT	Defines the allowe
2008	MAXIMUM FREQ	Range: 0 to 300 Hz	60 Hz	2008	MAXIMUM FREQ	Range: 0 to 500 H
2102	STOP FUNCTION	1 = COAST 2 = RAMP	1	2102	STOP FUNCTION	1 = COAST 2 = RAMP
2202	ACCELER TIME 1	Range for all ramp time parameters is 0.1 to 1800 s	5.0 s	2202	ACCELER TIME 1	Range for all ramp
2203	DECELER TIME 1		5.0 s	2203	DECELER TIME 1	
2204	ACCELER TIME 2		60.0 s	2205	ACCELER TIME 2	
2205	DECELER TIME 2		60.0 s	2206	DECELER TIME 2	
2606	U/f RATIO	1 = LINEAR 2 = SQUARE	1	2605	U/F RATIO	1 = LINEAR 2 = SQUARE
3301	SW VERSION	Software version code.		3301	FW VERSION	Displays the versio

= ACS150 / ACS350 specification is different from ACS140.

= ACS150 / ACS350 specification offers more than ACS140.

		ACS350			
	Default	Par.#	Parameter name	Description	Default
RD	1	9902	APPLIC MACRO	1 = ABB STANDARD 2 = 3-WIRE 3 = ALTERNATE 4 = MOTOR POT 5 = HAND/AUTO 6 = PID CONTROL 8 = TORQUE CTRL 0 = USER S1 LOAD -1 = USER S1 SAVE -2 = USER S2 LOAD -3 = USER S2 SAVE -4 = USER S3 LOAD -5 = USER S3 SAVE	1
al motor voltage	230 V 460 V	9905	MOTOR NOM VOLT	Defines the nominal motor voltage	230 V 460 V
nominal current	1.0*I_{2hd}	9906	MOTOR NOM CURR	Defines the motor nominal current	1.0*I_{2hd}
al motor frequency	60 Hz	9907	MOTOR NOM FREQ	Defines the nominal motor frequency	60 Hz
		9908	MOTOR NOM SPEED	50 to 30000 rpm	
atest fault. See chapter Fault tracing for clear		0401	LAST FAULT	Fieldbus code of the latest fault. See chapter Fault tracing for the codes. 0 = Fault history is clear	
	3	1003	DIRECTION	1 = FORWARD 2 = REVERSE 3 = REQUEST	3
	60 Hz	1105	REF1 MAX	0.0… to 500.0 Hz / 0… to 30000 rpm	60 Hz
	6 12 18	1202 1203 1204	CONST SPEED 1 CONST SPEED 2 CONST SPEED 3	0.0… to 500.0 Hz 0.0… to 500.0 Hz 0.0… to 500.0 Hz	6 12 18
value of AI1%	0%	1301	MINIMUM AI1	Relative minimum value of AI1%	0%
		1503	AO1 CONTENT MAX	Analog output content maximum	
d maximum motor current	1.8 * I_N	2003	MAX CURRENT	Defines the allowed maximum motor current	1.8 · I_{2N}
z	60 Hz	2008	MAXIMUM FREQ	Range: 0 to 500 Hz	60 Hz
	1	2102	STOP FUNCTION	1 = COAST 2 = RAMP 3 = SPEED COMP	1
time parameters is 0.0 to 1800 s	5.0 s 5.0 s 60.0 s 60.0 s	2202 2203 2205 2206	ACCELER TIME 1 DECELER TIME 1 ACCELER TIME 2 DECELER TIME 2	Range for all ramp time parameters is 0.0 to 1800 s	5.0 s 5.0 s 60.0 s 60.0 s
	1	2605	U/F RATIO	1 = LINEAR 2 = SQUARE 3 = USER DEFINED	1
n of the firmware package		3301	FW VERSION	Displays the version of the firmware package	

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