Low voltage AC drives

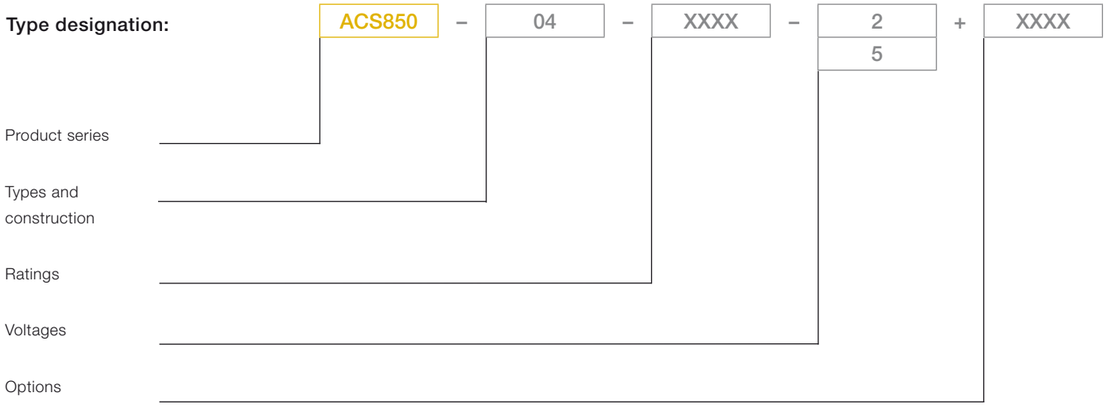
ABB machinery drives
ACS850
0.5 to 700 hp/0.37 to 560 kW
Catalog

Power and productivity
for a better world™

Selecting and ordering your drive

Type designation is a unique reference number that clearly identifies the drive by construction, power and voltage rating and selected options. Using the type designation you can specify your drives from the wide range of options available. Options are added to the type designation using the corresponding “plus” (+) code.

Build up your own ordering code using the type designation key below or contact your local ABB drives sales office and let them know what you want. Use page 3 as a reference section for more information.



Contents
ABB machinery drives, ACS850

Introduction to ACS850

ACS850 – 04 – XXXX – 2 / 5 + –

ABB machinery drives are designed to meet the production and performance needs of machine builders, system integrators, panel builders and end users in a broad range of applications. ACS850 drives are ideal for applications like cranes, extruders, conveyors, winders, pumps, fans and mixers in industries such as material handling, plastic and rubber, food and beverage, textile and metals.

The drives can be configured to meet the precise needs of industries and order-based configuration is an integral part of the offering. Covering a wide power and voltage range with standard and optional features, the drives are readily programmable, making their adaptation to different applications easy.

Wide range of options

ACS850 drives offer a wide range of built-in options such as different I/O and communications. A wide selection of external accessories is also available. The flexibility and programmability of the drives make them suitable for many applications in different industries.

Robust design

The current ratings of ABB machinery drives are designed for applications that have a high overload requirement. At the heart of the drive is the motor control platform, direct torque control (DTC) that provides accurate motor torque and speed control even without feedback. The drive is designed for a long working life and as such, parts like fans and capacitors are selected to maximize their lifetime. This, together with the extensive protection features and design details such as coated boards, results in excellent reliability for the demanding industrial market.

Optimized cabinet assembly

ACS850 drives are designed to be built into a customer's own cabinet, using minimal cabinet space while ensuring that cabinet assembly is as easy as possible. The drives can be mounted side-by-side and cabinet assembly documentation is included. The documentation gives examples of different cabinet configurations, examples of drawings and hints on the selection of auxiliary equipment.

G1 and G2 modules in the picture are equipped with option +H381

Main features

Feature	Advantage	Benefit
Modular and compact design		
Compact size, side-by-side mounting	Smallest frame size is only 93 mm (4 in) wide. More drives can be placed in the same cabinet.	Optimum installation layout and efficient cabinet space usage. Space and cost savings.
Modular design	Many standard features and a wide range of options allow different system configurations.	Fits many application needs. Offers flexibility in system design.
User interface and programming		
Intuitive human-machine interface	Large alphanumeric display showing different assistants and macros.	Faster and more accurate drive configuration. Optimal drive settings as assistants offer interactive help.
Drive programming and configuration	Can replace relays and small PLCs with function block programming.	Lower investment cost. Higher flexibility in system design.
Memory unit for easy drive management	Complete drive configuration and settings are stored in a separate memory unit. Power or control unit can be replaced without parameter setting.	Drive functionality can be easily configured, modified or updated with the memory unit. Offers quick and easy after-sales service.
Designed for reliability		
Robust main circuit design	Enhanced reliability. Coated boards and long lifetime components. Cooling supervision (depending on frame size).	Less process interruptions. Lower maintenance costs.
Extensive protection	Advanced thermal protection of the drive semiconductors and motor.	Higher process uptime. Early warning of any production interruptions.
Maintenance assistant	Indicates preventive maintenance needs of drive, motor or machine.	Helps with maintenance schedules and cost control of maintenance.
Diagnostic assistant	Helps in locating failures or reasons for performance changes and suggests remedies.	Reduced process downtime.
Optimized use		
Energy saving calculator	Monitors used and saved energy, displayed in kWh, currency (€ or $) or volume of CO_2 emission.	Easy to check the return on investment.
Load analyzer	Shows the load profile of the drive.	Easy process analysis.
Energy optimizer	Maximizes efficiency by optimizing the motor flux.	Improves motor performance therefore making the process more efficient.
Control and performance		
Compatible with these AC motors: - induction - permanent magnet - synchronous reluctance	Same drive can be used to control different motor types.	Savings in investment costs.
Standard drive-to-drive link, configurable as Modbus link	Galvanic isolated connection for master-follower communication or Modbus.	Lower investment costs. More reliable, disturbance-free isolation.
Different communication options	Supports most common communication protocols.	Can be applied to several existing processes.
Integrated safe torque off function (up to SIL 3)	High SIL class means high reliability of the safety function. Can also be used to implement Emergency Stop without contactors.	Cost-effective and certified solution for safe machine maintenance. Fulfils IEC 61508, EN 62061 and EN ISO 13849-1 standards.
Extensive configurable standard I/Os	Optimized accessibility.	Lower cost. Fewer parts and installation work needed for cabinet assembly.
Optional I/O extensions	Plug-in analog and digital I/O extensions.	Extends drives' scope, performance and applications opportunities.
Direct torque control	Accurate, dynamic and static speed and torque control. Excellent process control even without pulse encoder. High overload and high starting torque. Less noise during motor operation. Output frequency up to 500 Hz. Enhanced motor identification at standstill.	Improves product quality, productivity and reliability. Lower investment cost. Less maintenance. Suitable for use where audible noise is an issue. Applicable in high speed applications. Better process control due to more accurate identification. Motor identification without decoupling the load.

Technical data

ACS850 – 04 – XXXX – 2/5 + XXXX

Mains connection	
Supply voltage	3-phase 380 to 500 V AC +10 /-15% 3-phase 200 to 240 V AC ± 10%
Frequency	50 to 60 Hz ± 5%
DC connection	
DC voltage level	485 to 675 V DC ± 10% (-5 types) 270 to 324 V DC ± 10% (-2 types)
Charging circuit	Internal in frames A to D External in frames E0 to G2
Motor connection	
Motor types	AC induction motors, permanent magnet motors and synchronous reluctance motors
Output frequency	0 to 500 Hz
Motor control	Direct torque control (DTC) or scalar control
Torque control:	Torque step rise time:
Open loop	<5 ms with nominal torque
Closed loop	<5 ms with nominal torque
	Non-linearity:
Open loop	± 4% with nominal torque
Closed loop	± 3% with nominal torque
Speed control:	Static accuracy:
Open loop	10% of motor slip
Closed loop	0.01% of nominal speed
	Dynamic accuracy:
Open loop	0.3 to 0.4% sec. with 100% torque step
Closed loop	0.1 to 0.2% sec. with 100% torque step
Braking power connection	
Brake chopper	Standard in frames A to D, built-in option in the other frame sizes
Brake resistor	External resistor connected to drive

Operating conditions	
Degree of protection	IP20 according to EN 60529 (G frames IP00); Open type according to UL 508
Ambient temperature	-10 to +55 °C (14 to 131 °F), derating above 40 °C (104 °F) No frost allowed
Installation altitude	0 to 4000 m (0 to 13000 ft) (IT network: 2000 m [6560 ft]), derating above 1000 m (3280 ft): 1%/100 m (328 ft)
Relative humidity	Max. 95%, no condensation allowed
Climatic/ environmental conditions	Class 3K3, 3C2 according to EN 60721-3-3. Oil mist, formation of ice, moisture condensation, water drops, water spray, water splashes and water jets are not permissible (EN 60204, Part 1)
Vibration	Class 3M4 according to EN 60721-3-3
EMC (According to EN 61800-3)	Categories C2 and C3 with optional filter (according to EN 61800-3)
Functional safety	Safe torque off (STO according to EN 61800-5-2) IEC 61508: SIL 3 IEC 61511: SIL3 EN 62061: SILCL 3 EN ISO 13849-1: PL e Certified by TÜV
Compliance	Frames A to D: CE, GOST R, UL, cUL, CSA, C-Tick Frames E0 to G: CE, GOST R; pending: UL, cUL, CSA, C-Tick

Feature/frame size	A	B	C	D	E0	E	G1	G2
Current and power								
Nominal current	3 to 8 A	10.5 to 18 A	25 to 50 A	61 to 94 A	103 to 144 A	166 to 290 A	387 to 650 A	710 to 875 A
Maximum current	4.4 to 10.5 A	13.5 to 21 A	33 to 66 A	78 to 124 A	138 to 170 A	202 to 348 A	470 to 730 A	850 to 1100 A
Typical motor power in hp (230 V)	0.5 to 2 hp	3 to 5 hp	7.5 to 15 hp	20 to 30 hp	–	–	–	–
(480 V)	1.5 to 5 hp	5 to 10 hp	15 to 30 hp	40 to 60 hp	75 to 100 hp	125 to 200 hp	300 to 550 hp	600 to 700 hp
Typical motor power in kW (230 V)	0.37 to 1.5 kW	2.2 to 4 kW	5.5 to 11 kW	15 to 22 kW	–	–	–	–
(400 V)	1.1 to 3 kW	4 to 7.5 kW	11 to 22 kW	30 to 45 kW	55 to 75 kW	90 to 160 kW	200 to 355 kW	400 to 500 kW
(500 V)	1.5 to 4 kW	5.5 to 11 kW	15 to 30 kW	37 to 55 kW	55 to 90 kW	110 to 200 kW	250 to 400 kW	500 to 560 kW
Brake chopper	●	●	●	●	□	□	□	□
Brake resistor	■	■	■	■	■	■	■	■
Input choke	■	■	●	●	●	●	●	●
EMC filter/C2	■	■	■	■	□	□	–	–
EMC filter/C3	■	■	□	□	□	□	●	●
Mounting and cooling								
Air cooling	●	●	●	●	●	●	●	●
Side-by-side mounting	●	●	●	●	●	●	●	●
DIN rail mounting	●	●	–	–	–	–	–	–
Removable power connectors	●	●	–	–	–	–	–	–
Removable control connectors	●	●	●	●	●	●	●	●

● = standard □ = option, built-in ■ = option, external – = not available

Ratings, types and dimensions

ACS850 – 04 – XXXX – 2/5 + XXXX

Ratings 230 V

Nominal ratings		No-overload use		Light-duty use			Heavy-duty use			Type designation	Frame size
I_{2N} (A)	I_{Max} (A)	P_N (hp) U_N = 230 V	P_N (kW) U_N = 230 V	I_{Ld} (A)	P_{Ld} (hp) U_N = 230 V	P_{Ld} (kW) U_N = 230 V	I_{Hd} (A)	P_{Hd} (hp) U_N = 230 V	P_{Hd} (kW) U_N = 230 V		
3	4.4	0.5	0.37	2.8	0.5	0.37	2.5	0.5	0.37	ACS850-04-03A0-2	A
3.6	5.3	0.75	0.55	3.4	0.75	0.55	3	0.5	0.37	ACS850-04-03A6-2	A
4.8	7	1	0.75	4.5	1	0.75	4	0.75	0.55	ACS850-04-04A8-2	A
6	8.8	1.5	1.1	5.5	1	1.1	5	1	0.75	ACS850-04-06A0-2	A
8	10.5	2	1.5	7.6	2	1.5	6	1.5	1.1	ACS850-04-08A0-2	A
10.5	13.5	3	2.2	9.7	3	2.2	9	2	1.5	ACS850-04-010A-2	B
14	16.5	3	3	13	3	3	11	3	2.2	ACS850-04-014A-2	B
18	21	5	4	16.8	5	4	14	3	3	ACS850-04-018A-2	B
25	33	7.5	5.5	23	7.5	5.5	19	5	4	ACS850-04-025A-2	C
30	36	10	7.5	28	10	7.5	24	7.5	5.5	ACS850-04-030A-2	C
35	44	10	7.5	32	10	7.5	29	10	7.5	ACS850-04-035A-2	C
44	53	15	11	41	15	11	35	10	7.5	ACS850-04-044A-2	C
50	66	15	11	46	15	11	44	15	11	ACS850-04-050A-2	C
61	78	20	15	57	20	15	52	15	11	ACS850-04-061A-2	D
78	100	25	18.5	74	25	18.5	66	20	15	ACS850-04-078A-2	D
94	124	30	22	90	30	22	75	25	18.5	ACS850-04-094A-2	D

Ratings 400 to 500 V

Nominal ratings		No-overload use			Light-duty use				Heavy-duty use				Type designation	Frame size
I_{2N} (A)	I_{Max} (A)	P_N (hp) U_N = 480 V	P_N (kW) U_N = 400 V	P_N (kW) U_N = 500 V	I_{Ld} (A)	P_{Ld} (hp) U_N = 480 V	P_{Ld} (kW) U_N = 400 V	P_{Ld} (kW) U_N = 500 V	I_{Hd} (A)	P_{Hd} (hp) U_N = 480 V	P_{Hd} (kW) U_N = 400 V	P_{Hd} (kW) U_N = 500 V		
3	4.4	1.5	1.1	1.5	2.8	1	1.1	1.1	2.5	1	0.75	1.1	ACS850-04-03A0-5	A
3.6	5.3	2	1.5	1.5	3.4	2	1.5	1.5	3	1.5	1.1	1.5	ACS850-04-03A6-5	A
4.8	7	3	2.2	2.2	4.5	2	1.5	2.2	4	2	1.5	2.2	ACS850-04-04A8-5	A
6	8.8	3	2.2	3	5.5	3	2.2	3	5	3	2.2	2.2	ACS850-04-06A0-5	A
8	10.5	5	3	4	7.6	5	3	4	6	3	2.2	3	ACS850-04-08A0-5	A
10.5	13.5	5	4	5.5	9.7	5	4	5.5	9	5	4	4	ACS850-04-010A-5	B
14	16.5	7.5	5.5	7.5	13	7.5	5.5	7.5	11	7.5	5.5	5.5	ACS850-04-014A-5	B
18	21	10	7.5	11	16.8	10	7.5	7.5	14	10	7.5	7.5	ACS850-04-018A-5	B
25	33	15	11	15	23	15	11	11	19	10	7.5	11	ACS850-04-025A-5	C
30	36	20	15	18.5	28	20	15	15	24	15	11	15	ACS850-04-030A-5	C
35	44	25	18.5	22	32	20	15	18.5	29	20	15	18.5	ACS850-04-035A-5	C
44	53	30	22	30	41	30	22	22	35	25	18.5	22	ACS850-04-044A-5	C
50	66	30	22	30	46	30	22	30	44	30	22	30	ACS850-04-050A-5	C
61	78	40	30	37	57	40	30	37	52	40	22	30	ACS850-04-061A-5	D
78	100	60	37	45	74	50	37	45	66	50	37	45	ACS850-04-078A-5	D
94	124	60	45	55	90	60	45	55	75	50	37	45	ACS850-04-094A-5	D
103	138	75	55	55	100	75	55	55	83	60	45	55	ACS850-04-103A-5	E0
144	170	100	75	90	141	100	75	90	100	75	55	55	ACS850-04-144A-5	E0
166	202	125	90	110	155	125	75	90	115	75	55	75	ACS850-04-166A-5	E
202	282	150	110	132	184	150	90	110	141	100	75	90	ACS850-04-202A-5	E
225	326	150	110	132	220	150	110	132	163	125	90	110	ACS850-04-225A-5	E
260	326	200	132	160	254	200	132	160	215	150	110	132	ACS850-04-260A-5	E
290	348	200	160	200	286	200	160	200	232	150	132	160	ACS850-04-290A-5	E
387	470	300	200	250	377	300	200	250	300	200	160	200	ACS850-04-387A-5	G1
500	560	350	250	315	480	350	250	315	355	250	200	250	ACS850-04-500A-5	G1
580	680	450	315	355	570	450	315	355	414	350	200	250	ACS850-04-580A-5	G1
650	730	500	355	400	634	500	355	400	477	400	250	315	ACS850-04-650A-5	G1
710	850	600	400	500	700	600	400	500	566	450	315	400	ACS850-04-710A-5	G2
807	1020	700	450	560	785	600	450	560	625	500	355	450	ACS850-04-807A-5	G2
875	1100	700	500	560	857	700	450	560	680	600	400	450	ACS850-04-875A-5	G2

Notes

1) For ambient temperature of less than 35 °C (95 °F), maximum overload is 150% of I_{Hd}. For ambient temperature of 40 °C (104 °F), maximum overload is 145% of I_{Hd}.

2) For ambient temperature of less than 30 °C (86 °F), maximum overload is 150% of I_{Hd}. For ambient temperature of 40 °C (104 °F), maximum overload is 140% of I_{Hd}.

Nominal ratings	
I_{2N}	Rated current available continuously without overloading at 40 °C (104 °F).
I_{max}	Maximum output current. Available for 10 s at start, otherwise as long as allowed by drive temperature. Note: max. motor shaft power is 150% P_{Hd}.
Typical ratings: No-overload use	
P_N	Typical motor power in no-overload use.
Light-duty use	
I_{Ld}	Continuous current allowing 110% I_{Ld} for 1 min/5 min at 40 °C (104 °F).
P_{Ld}	Typical motor power in light-duty use.
Heavy-duty use	
I_{Hd}	Continuous current allowing 150% I_{Hd} for 1 min/5 min at 40 °C (104 °F).
P_{Hd}	Typical motor power in heavy-duty use.

The current ratings are the same regardless of the supply voltage within one voltage range.
The ratings apply at 40 °C (104 °F) ambient temperature.

Ratings, types and dimensions

ACS850 – 04 – XXXX – 2 / 5 + XXXX

Cooling characteristics and noise levels

Heat dissipation W	Air flow ft³/min (m³/h)	Noise level dBA	Type designation	Frame size
U_N = 400 V				
100	14 (24)	47	ACS850-04-03A0-5	A
106	14 (24)	47	ACS850-04-03A6-5	A
126	14 (24)	47	ACS850-04-04A8-5	A
148	14 (24)	47	ACS850-04-06A0-5	A
172	14 (24)	47	ACS850-04-08A0-5	A
212	28 (48)	39	ACS850-04-010A-5	B
250	28 (48)	39	ACS850-04-014A-5	B
318	28 (48)	39	ACS850-04-018A-5	B
375	84 (142)	71	ACS850-04-025A-5	C
485	84 (142)	71	ACS850-04-030A-5	C
513	84 (142)	71	ACS850-04-035A-5	C
541	118 (200)	71	ACS850-04-044A-5	C
646	118 (200)	71	ACS850-04-050A-5	C
840	171 (290)	70	ACS850-04-061A-5	D
1020	171 (290)	70	ACS850-04-078A-5	D
1200	171 (290)	70	ACS850-04-094A-5	D
1190	99 (168)	65	ACS850-04-103A-5	E0
1440	238 (405)	65	ACS850-04-144A-5	E0
1940	238 (405)	65	ACS850-04-166A-5	E
2310	238 (405)	65	ACS850-04-202A-5	E
2819	238 (405)	65	ACS850-04-225A-5	E
3260	238 (405)	65	ACS850-04-260A-5	E
4200	238 (405)	65	ACS850-04-290A-5	E
4403	1200	72*	ACS850-04-387A-5	G1
5602	1200	72*	ACS850-04-500A-5	G1
6409	1200	72*	ACS850-04-580A-5	G1
8122	1200	72*	ACS850-04-650A-5	G1
8764	1200	72*	ACS850-04-710A-5	G2
9862	1200	72*	ACS850-04-807A-5	G2
10578	1420	72*	ACS850-04-875A-5	G2

Heat dissipation W	Air flow ft³/min (m³/h)	Noise level dBA	Type designation	Frame size
U_N = 230 V				
91	14 (24)	47	ACS850-04-03A0-2	A
97	14 (24)	47	ACS850-04-03A6-2	A
114	14 (24)	47	ACS850-04-04A8-2	A
134	14 (24)	47	ACS850-04-06A0-2	A
154	14 (24)	47	ACS850-04-08A0-2	A
183	28 (48)	39	ACS850-04-010A-2	B
215	28 (48)	39	ACS850-04-014A-2	B
274	28 (48)	39	ACS850-04-018A-2	B
325	84 (142)	71	ACS850-04-025A-2	C
421	84 (142)	71	ACS850-04-030A-2	C
442	84 (142)	71	ACS850-04-035A-2	C
462	118 (200)	71	ACS850-04-044A-2	C
555	118 (200)	71	ACS850-04-050A-2	C
730	171 (290)	70	ACS850-04-061A-2	D
889	171 (290)	70	ACS850-04-078A-2	D
1054	171 (290)	70	ACS850-04-094A-2	D

* 65 dBA standby - 72 dBA running.

Dimensions

Frame size	Height [1] in	Height [1] mm	Depth [2] [3] in	Depth [2] [3] mm	Width in	Width mm	Weight lb	Weight kg
A	14.3	364	7.8	197	3.7	93	7	3
B	15.0	380	10.8	274	4.0	101	11	5
C	22.3	567	10.9	276	6.5	166	35	16
D	22.3	567	10.9	276	8.7	221	51	23
E0	23.7	602	13.9	354	10.9	276	77	35
E	27.6	700	17.4	443	12.3	312	147	67
G1	57.6 (61.4) [4]	1462 (1560) [4]	19.9 (20.3) [4]	505 (515) [4]	12 (13) [4]	305 (329) [4]	355 (421) [4]	161 (191) [4]
G2	65.4 (67.3) [4]	1662 (1710) [4]	19.9 (20.3) [4]	505 (515) [4]	12 (13) [4]	305 (329) [4]	439 (505) [4]	199 (229) [4]

Notes
All dimensions and weights are without additional options.
[1] Height is the maximum measure without clamping plates.
[2] An additional 50 mm (2 in) should be reserved for feedback cabling if FEN-01, -11 or -21 options are used (except for frame G1 and G2 with integrated control unit).
[3] Assistant control panel adds 23 mm (0.9 in) to the depth (except for frame G1 and G2 with integrated control unit).
[4] With +H381 optional cabling panel.

Standard control program

Based on direct torque control technology, the ACS850 offers highly advanced features. The ACS850 standard control program provides solutions to virtually all AC drives applications such as mixers, separators, extruders and conveyors.

Fast and easy commissioning
The ACS850 standard control program offers flexibility and extensive parameter settings. It consists of a simple, ready-made program that can easily be modified to meet specific application needs. Commissioning is also simplified by several standard software features.

Pre-programmed protection functions
A wide range of features provide protection for the drive, motor and the process:

- Ambient temperature
- DC overvoltage
- DC undervoltage
- Drive temperature
- Input phase loss
- Overcurrent
- Power limits
- Short circuit

Programmable protection functions:
- Adjustable power limits
- Control signal supervision
- Critical frequencies lock-out
- Current and torque limits
- Earth fault protection
- External fault
- Motor phase loss
- Motor stall protection
- Motor thermal protection
- Motor underload protection
- Panel loss

Program customization
In addition to standard control program functionalities the ACS850 offers function block programming which makes it possible to replace relays or even a PLC.

Removable memory unit
A removable memory unit provides easy maintenance by storing the complete firmware including all user settings and motor data. Thus, if the power unit or control unit is replaced, the drive can be re-commissioned without any reprogramming, just by moving the memory unit.

The removable memory unit:

- Stores the drive software and parameter settings
- Allows fast and easy recommissioning
- Enables software and parameter configuration at workshop instead of doing it on-site

Standard software features

The features of ACS850 drives are designed to enhance their reliability and durability as well as the easiness of use. Also several advanced functions make the drives easy to use. These functions can be accessed either via the user-friendly assistant control panel or DriveStudio PC tool.

Macros
Several macros which have pre-set, application-specific parameter settings are available as standard in each drive. These pre-programmed parameter settings enable fast and easy commissioning by adjusting all the relevant parameters in just a couple of clicks.

Startup assistant
The intelligent and intuitive startup assistant allows first time users to quickly get up to speed and customize the drive according to their needs. This is complemented by a built-in help function to make parameter-by-parameter setting easy. This way the drive can be quickly commissioned, even without manuals.

Maintenance assistant
The maintenance assistant reminds the user about the drive's preventive maintenance schedule or routine, or that of its associated components such as motor, cabinet air inlet filters and input contactors. It reminds users of planned maintenance needs based on running hours, operating hours or relay switching to reduce unplanned process interruptions.

Diagnostic assistant
Each ACS850 drive is equipped with a diagnostic assistant that helps in locating the cause of any disturbance to the drive and even suggests possible remedies. This reduces process downtime by making repair or adjustments quicker and easier.

Energy saving features
- A calculator showing the used and saved energy, displayed in kWh, currency (€ or $) or volume of CO_2 emission. Data is calculated by reference values stored in the drive by the user.
- An energy efficiency optimizer that adjusts the motor flux in such a way that the total efficiency is maximized.
- A load analyzer showing the load profile of the drive.

Short/long menus
The user interface can be configured so that it displays only the most common parameters. This short menu allows users to quickly access the parameters they need without having to go through all the drive parameters.

A long menu is available, displaying a complete list of parameters for a more advanced configuration.

Input and output mapping
This functionality allows the user to easily go through the input and output configuration of the drive.

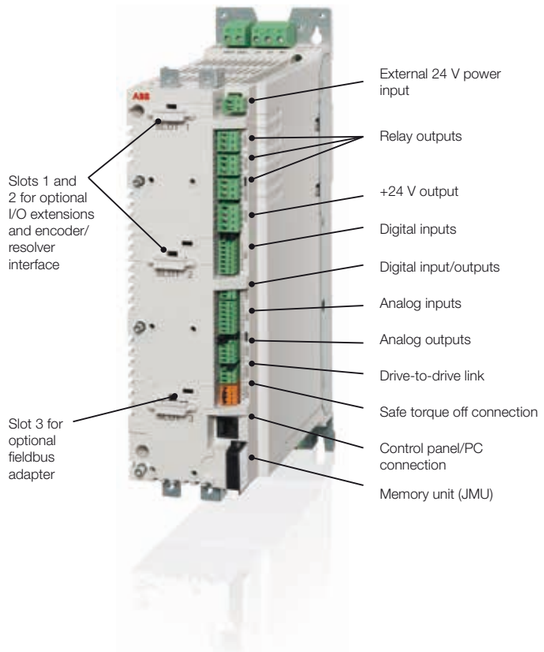
List of changed parameters
The feature allows users to go through the list of changed parameters. This way the user does not have to go through all the drive parameters making it quick to identify the recently modified ones.

Standard I/O

ACS850	–	04	–	XXXX	–	2 5	+	XXXX

Standard I/O connections
ACS850 drives have one of the most extensive offerings of standard I/Os on the market. Analog and digital I/O channels are used for different functions such as control, monitoring and measurement purposes (eg, motor temperature).

- Control voltage supply: external supply (24 V DC) input for the control unit
- Digital I/O: 6 x DI, 2 x DI/O (can be used also for pulse train inputs or outputs, max 32 kHz), 3 x RO
- Analog I/O: 2 x AI (mA or V), 2 x AO (mA)
- Thermistor input: motor thermistor (PTC)
- Start interlock: drive interlock input
- Embedded Modbus link as standard, galvanically isolated for trouble-free operation and can be alternatively configured as a high speed drive-to-drive link for master-follower operation
- Safe torque off (STO): designed for Safety Integrity Level 3 (SIL 3) according to IEC 61508
- Control panel connection: PC tools and control panel connection (RJ45)
- Memory unit connection: complete drive configuration and settings are stored in the removable memory unit



Control unit
The ACS850 control unit consists of various control connections, which can be configured as required by the customer application.

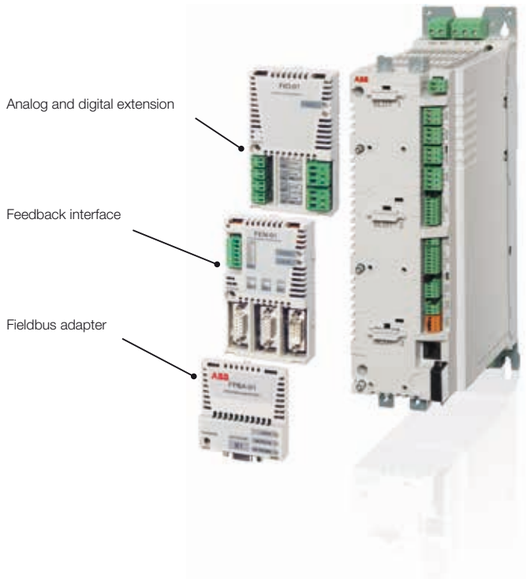
XPOW		
External power input 24 V DC, 1.6 A	+24VI	1
	GND	2
XRO1, XRO2, XRO3		
Relay output RO1 [Ready] 250 V AC/30 V DC 2 A	NO	1
	COM	2
	NC	3
Relay output RO2 [Running] 250 V AC/30 V DC 2 A	NO	4
	COM	5
	NC	6
Relay output RO3 [Fault (-1)] 250 V AC/30 V DC 2 A	NO	7
	COM	8
	NC	9
XD24		
+24 V DC*	+24VD	1
Digital input ground	DIGND	2
+24 V DC*	+24VD	3
Digital input/output ground	DIOGND	4
Ground selection jumper		
XDI		
Digital input DI1 [Stop/Start]	DI1	1
Digital input DI2	DI2	2
Digital input DI3 [Reset]	DI3	3
Digital input DI4	DI4	4
Digital input DI5	DI5	5
Digital input DI6 or thermistor input	DI6	6
Start interlock (0 = Stop)	DIIL	A
XDIO		
Digital input/output DIO1 [Output: Ready]	DIO1	1
Digital input/output DIO2 [Output: Running]	DIO2	2
XAI		
Reference voltage (+)	+VREF	1
Reference voltage (–)	-VREF	2
Ground	AGND	3
Analog input AI1 (Current or voltage, selectable by jumper AI1) [Speed reference 1]	AI1+	4
	AI1-	5
Analog input AI2 (Current or voltage, selectable by jumper AI2)	AI2+	6
	AI2-	7
AI1 current/voltage selection jumper		AI1
AI2 current/voltage selection jumper		AI2
XAO		
Analog output AO1 [Current %]	AO1+	1
	AO1-	2
Analog output AO2 [Speed %]	AO2+	3
	AO2-	4
XD2D		
Drive-to-drive link termination jumper		I
Drive-to-drive link	B	1
	A	2
	BGND	3
XSTO		
Safe torque off. Both circuits must be closed for the drive to start.	OUT1	1
	OUT2	2
	IN1	3
	IN2	4
Control panel connection		
Memory unit connection		

*Total maximum current: 200 mA

Options
Control and communication modules

ACS850 – 04 – XXXX – 2 / 5 + XXXX

Optional I/O
The optional I/O extension modules provide additional connectivity possibilities for ACS850 drives. Extensions include analog and digital modules and speed feedback interface modules which are mounted in the slots on the ACS850 control board. The control board has two slots available for I/O extension modules. Additionally, there is a third slot available for fieldbus adapter modules.



Fieldbus adapter modules
A wide range of fieldbus protocols are supported to enable the ACS850 to connect to major automation systems. Fieldbus adapter modules allow manufacturing flexibility, reduced installation and engineering effort via:

- Drive control
- Drive monitoring
- Drive diagnostics
- Drive parameter handling

Options	Option codes	Data	Install in
Analog and digital extension modules			
FIO-01	+L501	4 x DI/O, 2 x RO	Slot 1 or 2
FIO-11	+L500	3 x AI (mA/V), 1 x AO (mA), 2 x DI/O	
FIO-21	+L519	1 x AI (mA/V), 1 x AO (mA), 1 x DI, 2 x RO	
Feedback interface modules			
FEN-01	+L517	2 inputs (TTL incremental encoder), 1 output	Slot 1 or 2
FEN-11	+L518	2 inputs (SinCos absolute, TTL incremental encoder), 1 output	
FEN-21	+L516	2 inputs (Resolver, TTL incremental encoder), 1 output	
FEN-31	+L502	1 input (HTL incremental encoder), 1 output	
Fieldbus adapter modules			
FPBA-01	+K454	PROFIBUS DP, DPV0/DPV1	Slot 3
FCAN-01	+K457	CANopen®	
FDNA-01	+K451	DeviceNet™	
FENA-11	+K473	EtherNet/IP™, Modbus TCP, PROFINET IO	
FSCA-01	+K458	Modbus RTU	
FECA-01	+K469	EtherCAT®	
FLON-01	+K452	LonWorks®	

Options
Control panel

ACS850 – 04 – XXXX – 2 / 5 + XXXX

Assistant control panel
The assistant control panel features a multilingual alphanumeric display for easy drive configuration. It is an ideal tool for service engineers, providing the following features:

- A large alphanumeric display
- Easy navigation
- Soft and convenient keys
- Local control keys (start/stop/reference)
- Parameter setting and monitoring
- Status and history data
- Real-time clock

Assisting functionalities like:
- Startup assistant
- Maintenance assistant
- Diagnostic assistant

Assistant control panel options
There are various cover assembly options for the ACS850. The cover is mounted on the drive depending on the specific need of the customer application.

Standard control unit cover
The control unit cover comes as standard without an assistant control panel and holder.

Control unit cover with panel holder (+J414)
Includes the control unit cover with a panel holder, a panel cover and an internal interface cable.

Control unit cover with assistant control panel (+J400)
Includes the assistant control panel, a control unit cover with a panel holder and an internal interface cable.

Door mounting kit with assistant control panel (+J410)
Includes the assistant control panel and a panel holder for cabinet door mounting, with IP54 kit and 3 m (10 ft) cable.

Options
G frame drive modules

ACS850 – 04 – XXXX – 2/5 + XXXX

The ACS850 G1 and G2 frames have some useful optional features. For ordering codes and description see the table below.

Options	Description
+D150	Braking chopper + connection busbars
+E208	Common mode filter
+H356	DC connection busbars
+H381	Power cabling panels
+0H354	Without pedestal
+P905	Integrated control unit

The cabling panel option allows easy connection of input power and motor cables. The cabling panel enables cabinet drive module installing and removing without the need of disconnecting cables.

As a standard, the G1 and G2 frames have an external control unit. This allows easy and safe installation of control cabling. With the integrated control unit option (+P905), the contol unit is located inside the drive module making the installation space requirement compact.

Cabling panel option +H381

Standard drive module delivery includes external control unit. The control panel +J400 comes as an option.

Optional +P905 (integrated) control unit with control panel (+J400)

Options
EMC filters

ACS850 – 04 – XXXX – 2/5 + XXXX

Electromagnetic Compatibility (EMC) and modules

The electrical/electronic equipment must be able to operate without problems within an electromagnetic environment. This is called immunity. The ACS850 is designed to have adequate immunity against interference from other equipment. Likewise, the equipment must not disturb or interfere with any other product or system within its locality. This is called emission. Each ACS850 model can be equipped with a built-in filter to reduce high frequency emission.

EMC standards

The EMC product standard EN 61800-3 (2004) covers the specific EMC requirements stated for drives (tested with motor and cable) within the EU.

EMC standards such as EN 55011, or EN 61000-6-3/4, are applicable to industrial and domestic equipment and systems including drive components inside. Drive units complying with requirements of EN 61800-3 are compliant with comparable categories in EN 55011 and EN 61000-6-3/4, but not necessarily vice versa. EN 55011 and EN 61000-6-3/4 do not specify cable length nor require a motor to be connected as a load. The emission limits are comparable according to the following EMC standards table.

1st environment vs 2nd environment

1st environment (category C1 to C2)
1st environment includes domestic premises. It also includes establishments directly connected without intermediate transformer to a low-voltage power supply network which supplies buildings used for domestic purposes.

2nd environment (category C3 to C4)
2nd environment includes all establishments other than those directly connected to a low-voltage power supply network which supplies buildings used for domestic purposes.

Selecting an EMC filter

The following table gives the correct filter selection.

EMC standards

EN61800-3 (2004) product standard	EN 55011, product family standard for industrial, scientific and medical (ISM) equipment	EN 61000-6-4, generic emission standard for industrial environments	EN 61000-6-3, generic emission standard for residential, commercial and light-industrial environment
Category C1 (1st environment)	Group 1 Class B	Not applicable	Applicable
Category C2 (1st environment)	Group 1 Class A	Applicable	Not applicable
Category C3 (2nd environment)	Group 2 Class A	Not applicable	Not applicable
Category C4 (2nd environment)	Not applicable	Not applicable	Not applicable

EMC category / frame	Option code	A to B	C to D	E0 to E	G1 to G2
C3 filter, earthed/unearthed network *	+E210	–	–	□	□
C3 filter earthed network only *	+E200	■ 1)	□	–	–
C2 filter, earthed network only *	+E202	–	–	□	–
C2 filter, earthed network only *		■ 2)	■ 2)	–	–

□ = option, built-in ■ = option, external – = not available

Notes
1) External, plug-in
2) External accesory, no plus code
* Max. cable length 100 m (328 ft)

Options
Mains circuit

ACS850 – 04 – XXXX – 2/5 + XXXX

Mains chokes

Mains chokes are typically used to reduce harmonics in the mains current. Frames C to G2 are equipped with built-in choke as standard. For frames A and B, the ACS850 drives do not necessarily need a separate mains choke for operation. If, however, a separate mains choke is needed, mains chokes are available according to the following table.

Frame size	Drive type designation	Type	Dimensions						Weight	
			Width		Length		Depth			
			in	mm	in	mm	in	mm	lb	kg
A	ACS850-04-03A0-5	CHK-01	4.72	120	5.75	146	3.11	79	4.0	1.8
A	ACS850-04-03A6-5	CHK-01	4.72	120	5.75	146	3.11	79	4.0	1.8
A	ACS850-04-04A8-5	CHK-02	5.91	150	6.89	175	3.39	86	8.4	3.8
A	ACS850-04-06A0-5	CHK-02	5.91	150	6.89	175	3.39	86	8.4	3.8
A	ACS850-04-08A0-5	CHK-02	5.91	150	6.89	175	3.39	86	8.4	3.8
B	ACS850-04-010A-5	CHK-03	5.91	150	6.89	175	3.39	100	11.9	5.4
B	ACS850-04-014A-5	CHK-03	5.91	150	6.89	175	3.39	100	11.9	5.4
B	ACS850-04-018A-5	CHK-04	5.91	150	6.89	175	3.39	100	11.5	5.2

Resistor braking

Depending on the application, an external braking resistor may be needed to dissipate the generated kinetic energy thermally. For this, ACS850 uses its braking chopper and external braking resistor.

Brake chopper

The ACS850 series has built-in brake choppers in frames A to D (up to 45 kW [60 hp] at 400 V) as standard. Above this, brake choppers are available as built-in options.

Brake resistor

Preselected brake resistors are separately available for all ACS850 types. Resistors include integrated thermal sensor as standard. Resistors other than standard offering may be used providing the specified resistance value is not decreased, and the heat dissipation capacity of the resistor is sufficient for the drive application.

For ACS850 drives, no separate fuses in the brake circuit are required if the following conditions are met:

– The ACS850 mains cable is protected by fuses
– No mains cable/fuse overrating takes place

Drive P/N ACS850-04-	HP ND	DutyCycle=3 sec on/27 sec off				DutyCycle=10 sec on/50 sec off			
		Resistor	Ohms	Watts	Dimensions	Resistor Part No.	Watts	Watts	Dimensions
06A0-2	15	P14494-61	120	300	12Wx5Dx5H	P14494-61	120	300	12Wx5Dx5H
08A0-2	2	P14494-61	120	300	12Wx5Dx5H	P14494-61	120	300	12Wx5Dx5H
010A-2	3	ABB-48431-050	80	400	12Wx7Dx5H	ABB-48431-050	80	400	12Wx7Dx5H
014A-2	3	ABB-41139	44	300	12Wx5Dx5H	ABB-43390	40	800	12Wx7Dx5H
018A-2	5	ABB-41139	44	300	12Wx5Dx5H	ABB-43390	40	800	12Wx7Dx5H
025A-2	75	P14494-40	21	750	12Wx7Dx5H	P14494-40	21	750	12Wx7Dx5H
030A-2	10	P14494-40	21	750	12Wx7Dx5H	P14494-41	21	1050	12Wx10Dx5H
035A-2	10	P14494-40	21	750	12Wx7Dx5H	P14494-41	21	1050	12Wx10Dx5H
044A-2	15	ABB-41144	13	1200	12Wx10Dx5H	ABB-48431-031	13	1872	12Wx16Dx5H
050A-2	15	ABB-41144	13	1200	12Wx10Dx5H	ABB-48431-031	13	1872	12Wx16Dx5H
061A-2	20	ABB-41144	13	1200	12Wx10Dx5H	ABB-48431-031	13	1872	12Wx16Dx5H
078A-2	25	ABB-48431-031	13	1872	12Wx16Dx5H	ABB-41157	13	2100	19Wx10Dx5H
094A-2	30	ABB-48431-031	13	1872	12Wx16Dx5H	ABB-44494	13	3333	19Wx10Dx5H

Options
Mains circuit

ACS850 – 04 – XXXX – 2/5 + XXXX

Three phase 200–240 V applications, stopping duty only
Standard Enclosed Resistor packages 1

Drive P/N ACS850-04-	HP ND	DutyCycle=30 sec on/180 sec off				DutyCycle=60 sec on/180 sec off			
		Resistor	Ohms	Watts	Dimensions	Resistor Part No.	Ohms	Watts	Dimensions
06A0-2	1,5	P14494-61	120	300	12Wx5Dx5H	ABB-48431-110	120	600	12Wx7Dx5H
08A0-2	2	P14494-61	120	300	12Wx5Dx5H	ABB-48431-110	120	600	12Wx7Dx5H
010A-2	3	ABB-48431-050	80	400	12Wx7Dx5H	ABB-48431-052	80	800	12Wx7Dx5H
014A-2	3	ABB-43390	40	800	12Wx7Dx5H	ABB-44490	41	980	12Wx10Dx5H
018A-2	5	ABB-43390	40	800	12Wx7Dx5H	ABB-44512	40,6	1303	12Wx13Dx5H
025A-2	7,5	P14494-41	21	1050	12Wx10Dx5H	P14494-43	21	2000	12Wx16Dx5H
030A-2	10	P14494-42	21	1500	12Wx13Dx5H	ABB-44515	22	2910	19Wx13Dx5H
035A-2	10	P14494-42	21	1500	12Wx13Dx5H	ABB-44515	22	2910	19Wx13Dx5H
044A-2	15	ABB-48431-031	13	1872	12Wx16Dx5H	ABB-44494	13	3333	19Wx10Dx5H
050A-2	15	ABB-48431-031	13	1872	12Wx16Dx5H	ABB-44494	13	3333	19Wx10Dx5H
061A-2	20	ABB-44494	13	3333	19Wx10Dx5H	ABB-48431-035	13	4212	26.5Wx10Dx5H
078A-2	25	ABB-44494	13	3333	19Wx10Dx5H	ABB-48431-036	13	6292	26.5Wx13Dx5H
094A-2	30	ABB-48431-035	13	4212	26.5Wx10Dx5H	ABB-48431-036	13	6292	26.5Wx13Dx5H

Three phase 380–480 V applications, stopping duty only
Standard Enclosed Resistor packages 1

Drive P/N ACS850-04-	HP ND	DutyCycle=3 sec on/27 sec off				DutyCycle=10 sec on/50 sec off			
		Resistor	Ohms	Watts	Dimensions	Resistor Part No.	Ohms	Watts	Dimensions
06A0-5	3	P14494-61	120	300	12Wx5Dx5H	P14494-61	120	300	12Wx5Dx5H
08A0-5	5	P14494-61	120	300	12Wx5Dx5H	ABB-48431-110	120	600	12Wx7Dx5H
010A-5	5	ABB-48431-050	80	400	12Wx5Dx5H	ABB-48431-052	80	800	12Wx7Dx5H
014A-5	75	ABB-41152	45	600	12Wx7Dx5H	P14494-25	45	800	12Wx7Dx5H
018A-5	10	ABB-41152	45	600	12Wx7Dx5H	P14494-26	45	1260	12Wx10Dx5H
025A-5	15	ABB-48431-002	22	819	12Wx7Dx5H	ABB-48431-004	22	1408	12Wx13Dx5H
030A-5	20	ABB-41154	22	900	12Wx10Dx5H	ABB-48431-005	22	1862	12Wx16Dx5H
035A-5	23	ABB-48431-003	22	1140	12Wx10Dx5H	ABB-44472	22	1904	12Wx16Dx5H
044A-5	30	ABB-48431-030	13	1433	12Wx13Dx5H	ABB-48431-033	13	3328	19Wx10Dx5H
050A-5	30	ABB-48431-030	13	1433	12Wx13Dx5H	ABB-48431-033	13	3328	19Wx10Dx5H
061A-5	40	ABB-48431-031	13	1872	12Wx16Dx5H	ABB-48431-033	13	3328	19Wx10Dx5H
078A-5	50	ABB-48431-033	13	3328	19Wx10Dx5H	ABB-44495	13	4153	26.5Wx10Dx5H
094A-5	60	ABB-48431-033	13	3328	19Wx10Dx5H	ABB-48431-036	13	6292	26.5Wx13Dx5H
103A-5	75	ABB-41170	8	4600	26.5Wx10Dx5H	ABB-48431-120	8	6272	26.5Wx16Dx5H
144A-5	100	ABB-41161	6	4600	26.5Wx10Dx5H	ABB-44499	6,1	9444	28Wx10Dx10H
166A-5	125	ABB-48431-183	4,3	6209	26.5Wx13Dx5H	ABB-48431-184	4,3	10750	28Wx10Dx10H
202A-5	150	ABB-44479	4,26	9872	26.5Wx16Dx5H	ABB-44480	4,26	11696	28Wx10Dx10H
225A-5	150	ABB-44479	4,26	9872	26.5Wx16Dx5H	ABB-44480	4,26	11696	28Wx10Dx10H
260A-5	200	ABB-44479	4,26	9872	26.5Wx16Dx5H	ABB-48431-185	4,3	17067	28Wx13Dx10H
290A-5	200	ABB-48431-271	2,9	14210	28Wx10Dx10H	ABB-48431-272	2,9	16313	28Wx10Dx10H
387A-5	300	ABB-48431-331	2,2	17820	28Wx13Dx10H	ABB-48431-332	2,2	26620	30Wx18Dx24H
500A-5	350	ABB-48431-331	2,2	17820	28Wx13Dx10H	ABB-48431-332	2,2	26620	30Wx18Dx24H
580A-5	400	ABB-48431-420	1,5	18150	28Wx16Dx10H	ABB-48431-452	1,35	36754	30Wx18Dx32H
650A-5	450	ABB-48431-420	1,5	18150	28Wx16Dx10H	ABB-48431-452	1,35	36754	30Wx18Dx32H
710A-5	500	ABB-48431-541	0,9	24503	30Wx18Dx16H	ABB-48431-544	0,9	45600	30Wx18Dx32H
807A-5	550	ABB-48431-541	0,9	24503	30Wx18Dx16H	ABB-48431-544	0,9	45600	30Wx18Dx32H
875A-5	600	ABB-48431-541	0,9	24503	30Wx18Dx16H	ABB-48431-544	0,9	45600	30Wx18Dx32H

1 When using “Low Noise Mode” (parameter 40.01) for high output frequency, see recommendations in the hardware manual

Options
Mains circuit

ACS850 – 04 – XXXX – 2/5 + XXXX

Three phase 380–480 V applications, stopping duty only, Standard Enclosed Resistor packages 1

DutyCyle=30 sec on/180 sec off						DutyCycle=60 sec on/180 sec off			
Drive P/N ACS850-04-	HP ND	Resistor	Ohms	Watts	Dimensions	Resistor Part No.	Watts	Watts	Dimensions
06A0-5	3	ABB-48431-110	120	600	12Wx7Dx5H	P14494-17	150	900	12Wx10Dx5H
08A0-5	5	ABB-48431-110	120	600	12Wx7Dx5H	P14494-18	150	1200	12Wx13Dx5H
010A-5	5	ABB-48431-052	80	800	12Wx7Dx5H	ABB-48431-053	80	1600	12Wx13Dx5H
014A-5	7,5	P14494-26	45	1260	12Wx10Dx5H	P14494-27	45	1920	12Wx16Dx5H
018A-5	10	P14494-26	45	1260	12Wx10Dx5H	P14494-28	45	2450	19Wx13Dx5H
025A-5	15	ABB-48431-005	22	1862	12Wx16Dx5H	ABB-48431-008	22	3168	19Wx13Dx5H
030A-5	20	ABB-48431-007	22	2426	19Wx10Dx5H	ABB-48431-009	22	5632	26.5Wx10Dx5H
035A-5	23	ABB-44515	22	2910	19Wx13Dx5H	ABB-48431-009	22	5632	26.5Wx10Dx5H
044A-5	30	ABB-44474	13	3558	19Wx10Dx5H	ABB-48431-036	13	6292	26.5Wx13Dx5H
050A-5	30	ABB-44474	13	3558	19Wx10Dx5H	ABB-48431-036	13	6292	26.5Wx13Dx5H
061A-5	40	ABB-44517	13,3	5093	26.5Wx13Dx5H	ABB-48431-037	13	8125	26.5Wx16Dx5H
078A-5	50	ABB-48431-036	13	6292	26.5Wx13Dx5H	ABB-48431-038	13	11700	28Wx13Dx10H
094A-5	60	ABB-48431-037	13	8125	26.5Wx16Dx5H	ABB-48431-038	13	11700	28Wx13Dx10H
103A-5	75	ABB-48431-122	8	11552	28Wx10Dx10H	ABB-48431-123	8	15488	28Wx16Dx10H
144A-5	100	ABB-44500	6,44	10892	28Wx10Dx10H	ABB-44544	6,39	21955	28Wx16Dx10H
166A-5	125	ABB-48431-185	4,3	17067	28Wx13Dx10H	ABB-48431-187	4,3	27520	30Wx18Dx24H
202A-5	150	ABB-48431-186	4,3	21070	28Wx16Dx10H	ABB-48431-188	4,3	34830	30Wx18Dx24H
225A-5	150	ABB-48431-186	4,3	21070	28Wx16Dx10H	ABB-48431-188	4,3	34830	30Wx18Dx24H
260A-5	200	ABB-48431-187	4,3	27520	30Wx18Dx24H	ABB-48431-189	4,3	43000	30Wx18Dx24H
290A-5	200	ABB-48431-273	2,9	23490	28Wx16Dx10H	ABB-48431-275	2,9	41760	30Wx18Dx32H
387A-5	300	ABB-48431-334	2,2	40095	30Wx18Dx32H	ABB-44551	2,02	70350	30Wx18Dx40H
500A-5	350	ABB-48431-334	2,2	40095	30Wx18Dx32H	ABB-44551	2,02	70350	30Wx18Dx40H
580A-5	400	ABB-48431-454	1,35	54000	30Wx18Dx32H	ABB-48431-456	1,35	91260	30Wx18Dx56H
650A-5	450	ABB-48431-454	1,35	54000	30Wx18Dx32H	ABB-48431-456	1,35	91260	30Wx18Dx56H
710A-5	500	ABB-48431-517	1	67600	30Wx18Dx40H	ABB-48431-485	1,2	108000	30Wx18Dx64H
807A-5	550	ABB-48431-517	1	67600	30Wx18Dx40H	ABB-48431-485	1,2	108000	30Wx18Dx64H
875A-5	600	ABB48431-517	1	67600	30Wx18Dx40H	ABB-48431-485	1,2	108000	30Wx18Dx64H

1 When using “Low Noise Mode” (parameter 40.01) for high output frequency, see recommendations in the hardware manual

Options
Mains circuit

ACS850 – 04 – XXXX – 2/5 + XXXX

du/dt filters

du/dt filtering suppresses inverter output voltage spikes and rapid voltage changes that stress motor insulation.

Additionally, du/dt filtering reduces capacitive leakage currents and high frequency emission of the motor cable as well as high frequency losses and bearing currents in the motor.

The need for du/dt filtering depends on the motor age and insulation. For information on the construction of the motor insulation, consult the motor manufacturer. If the motor does not fulfil the requirements of the filter selection table, the lifetime of the motor might decrease. Insulated non-driven end (N-end) bearings and/or common mode filters are also required for motor bearing currents with motors bigger than 100 kW. For more information please see the ACS850 hardware manual.

External du/dt filters

ACS850		du/dt output filter UL Open																			
230 V	480 V	V1K3A00	V1K4A00	V1K6A00	V1K8A00	V1K12A00	V1K16A00	V1K18A00	V1K25A00	V1K27A00	V1K35A00	V1K45A00	V1K55A00	V1K80A00	V1K110A00	V1K130A00	V1K160A00	V1K200A00	V1K250A00	V1K362A00	V1K420A00	V1K600A00	V1K750A00
-03A0-2		■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
-03A6-2		–	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
-04A8-2		–	–	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
-06A0-2	-06A0-5	–	–	•	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
-08A0-2	-08A0-5	–	–	–	•	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
-010A-2	-010A-5	–	–	–	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
-014A-2	-014A-5	–	–	–	•	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
-018A-2	-018A-5	–	–	–	–	■	□	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
-025A-2	-025A-5	–	–	–	–	–	•	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
-030A-2	-030A-5	–	–	–	–	–	–	□	–	■	–	–	–	–	–	–	–	–	–	–	–	–	–
-035A-2	-035A-5	–	–	–	–	–	–	–	□	■	–	–	–	–	–	–	–	–	–	–	–	–	–
-044A-2	-044A-5	–	–	–	–	–	–	–	–	□	■	–	–	–	–	–	–	–	–	–	–	–	–
-050A-2	-050A-5	–	–	–	–	–	–	–	–	□	■	–	–	–	–	–	–	–	–	–	–	–	–
-061A-2	-061A-5	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–	–	–	–	–	–	–
-078A-2	-078A-5	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–	–	–	–	–	–
-094A-2	-094A-5	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–	–	–	–	–	–
	-103A-5	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–	–	–	–	–
	-144A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–	–	–	–
	-166A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–	–	–
	-202A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–	–
	-225A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–	–
	-260A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–
	-290A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–	–
	-387A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–	–
	-500A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–	–
	-580A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–
	-650A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•	–	–
	-710A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•
	-807A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	•
	-875A-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

■ = 230V □ = 230V and 480V • = 480V

Options
Mains circuit

ACS850 – 04 – XXXX – 2/5 + XXXX

du/dt output filter	Watts	Dimensions (HxWxD) in	Weight
V1K3A00	75	9x5.5x7.25	8
V1K4A00	75	9x5.5x7.25	8
V1K6A00	80	9x5.5x7.25	8
V1K8A00	90	9x5.5x7.25	8
V1K12A00	95	9x5.5x7.25	8
V1K16A00	95	9x5.5x8.25	12
V1K18A00	110	9x5.5x8.25	12
V1K25A00	110	9x5.5x8.25	12
V1K27A00	110	9x5.5x8.25	14
V1K35A00	130	12x8x9	17
V1K45A00	135	12x8x9	17
V1K55A00	145	12x8x9	23
V1K80A00	255	12x8x9	23
V1K110A00	245	12x8x10.25	40
V1K130A00	270	8.5x11x9.5	55
V1K160A00	260	8.5 x11x10.5	60
V1K200A00	265	8.5 x11x10.5	60
V1K250A00	290	8.5 x11x10.5	65
V1K362A00	300	8.5x11.75x12	80
V1K420A00	450	10x11.75x13.75	95
V1K600A00	515	12.75x15x13.75	130
V1K750A00	770	12/75x15x14.75	135

du/dt filter selection table

Motor type	Nominal mains voltage (U_N)	Motor insulation requirement
ABB M2 and M3 motors	$U_N \leq 500$ V	Standard insulation system.
ABB form-wound HXR and AM motors	380 V < $U_N \leq 500$ V	Standard insulation system.
ABB random-wound HXR and AM motors	380 V < $U_N \leq 500$ V	Check motor insulation system with the motor manufacturer.
Non-ABB random-wound and form-wound	$U_N \leq 420$ V	If the insulation system withstands $\hat{U}_{LL}$ = 1600 V and Δt = 0.2 µs, du/dt filtering is not required. With du/dt filtering the insulation system must withstand $\hat{U}_{LL}$ = 1300 V.

U_N = Nominal mains voltage.
$\hat{U}_{LL}$ = Peak line-to-line voltage at motor terminals.
Δt = Rise time, ie, interval during which line-to-line voltage at motor terminals changes from 10% to 90% of full voltage range.

* 3 filters included, dimensions apply for one filter.

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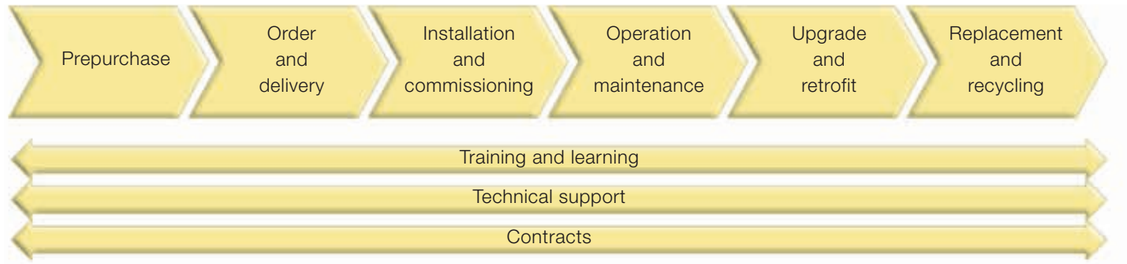

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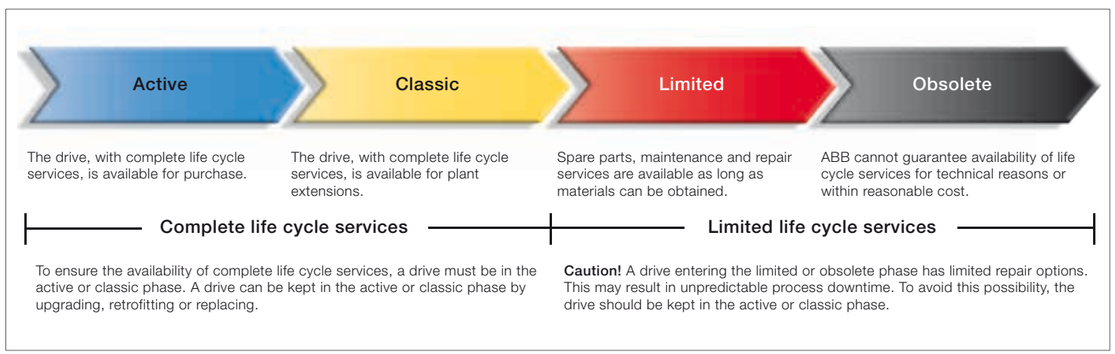
ABB drive life cycle management model



Notes

Notes

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