

ABB industrial drives

ACS800-07LC, liquid-cooled single drives, 200 to 5600 kW

Technical catalogue





ACS800 liquid-cooled drive

ACS800-07LC, 200 to 5600 kW

ACS800-07LC - XXXX - X

Ultimate solution for high power applications

The new liquid-cooled ACS800 frequency converter offers robust design for high power applications. The compact size with a totally enclosed cabinet is optimized for harsh environmental conditions. The liquid-cooled ACS800 product series provides advanced reliability for high power applications.

The ACS800-07LC single drive is available from 200 kW up to 5600 kW at 380 to 690 V supply voltages.

Advanced liquid cooling

The ACS800 liquid-cooled drive utilizes direct liquid cooling which makes the converter extremely compact and silent. Liquid cooling reduces the need for high-power filtered air-cooling in the installation rooms. Along with the high efficiency, direct liquid cooling offers low noise and easy heat transfer without air filtering.

Customer specific design

The modular hardware design and advanced software features of the liquid-cooled single drive enable the most sophisticated drive solutions for both induction and permanent magnet motors. Our customized solutions provide the optimum customer benefits. The design meets the international standards and marine classification requirements. ABB's extensive application and product know-how is at your service.

Intelligence and high availability

The ABB ACS800 liquid-cooled series has a number of unique features as standard, and which are not available in previous generations of ABB drives. These include:

- Inbuilt redundancy through parallel connected modules - each module is a complete three-phase inverter
- Ability to run with partial load even when one of the modules is not operating - enabling higher drive availability and greater process uptime.

With ABB drives, you get more than the most reliable equipment and systems. ABB drives are backed by our full service and support network, which covers field service and training as well as spare parts. This ensures reliable and economic operation under all conditions

“Compact and easy” – are the watchwords to describe the entire ACS800 liquid-cooled drive range. They demonstrate how technology enables ABB to add more and more features into a shrinking space – and still give the benefits of easy installation, access and use.



Ratings and dimensions



Nominal ratings		No-overload use	Light-overload use		Heavy-duty use		Noise level	Liquid dissipation	Mass flow	Type code	Frame size
$I_{cont,max}$ A	I_{max} A	$P_{cont,max}$ kW	I_N A	P_N kW	I_{hd} A	P_{hd} kW	dBA	kW	l/min		
$U_n = 400$ V (Ranges 380 - 415 V). The power ratings are valid at nominal voltage 400 V.											
563	674	315	540	250	421	200	55	8.7	32	ACS800-07LC-0390-3	1xD3 + 1xR8i
678	837	355	651	355	507	250	55	10	32	ACS800-07LC-0470-3	1xD3 + 1xR8i
889	1037	500	853	400	665	355	55	14	32	ACS800-07LC-0620-3	1xD3 + 1xR8i
1103	1279	630	1059	560	825	450	56	16	45	ACS800-07LC-0760-3	1xD4 + 2xR8i
1329	1590	710	1276	710	994	500	56	21	45	ACS800-07LC-0920-3	1xD4 + 2xR8i
1742	1994	900	1673	900	1303	710	56	26	45	ACS800-07LC-1210-3	1xD4 + 2xR8i
1973	2347	1120	1894	1120	1476	900	57	28	77	ACS800-07LC-1370-3	2xD4 + 3xR8i
2587	2941	1400	2484	1400	1935	1120	57	37	77	ACS800-07LC-1790-3	2xD4 + 3xR8i
3414	3906	2000	3277	2000	2553	1400	58	51	90	ACS800-07LC-2370-3	2xD4 + 4xR8i
4245	4858	2500	4075	2240	3175	1800	59	62	122	ACS800-07LC-2940-3	3xD4 + 5xR8i
5067	5799	2800	4865	2800	3790	2000	60	76	135	ACS800-07LC-3510-3	3xD4 + 6xR8i
$U_n = 500$ V (Ranges 380 - 500 V). The power ratings are valid at nominal voltage 500 V.											
546	673	355	524	355	408	250	55	8.7	32	ACS800-07LC-0470-5	1xD3 + 1xR8i
630	838	400	605	400	471	315	55	10	32	ACS800-07LC-0550-5	1xD3 + 1xR8i
840	1042	560	806	560	568	400	55	13	32	ACS800-07LC-0730-5	1xD3 + 1xR8i
1070	1280	710	1027	710	800	560	56	16	45	ACS800-07LC-0930-5	1xD4 + 2xR8i
1235	1589	900	1185	900	924	630	56	19	45	ACS800-07LC-1070-5	1xD4 + 2xR8i
1646	1996	1120	1581	1120	1232	710	56	25	45	ACS800-07LC-1430-5	1xD4 + 2xR8i
1833	2344	1250	1760	1250	1371	900	57	29	58	ACS800-07LC-1590-5	1xD4 + 3xR8i
2444	2943	1600	2347	1600	1828	1250	58	36	77	ACS800-07LC-2120-5	2xD4 + 3xR8i
3226	3885	2240	3097	2240	2413	1600	58	49	90	ACS800-07LC-2790-5	2xD4 + 4xR8i
4011	4830	2800	3851	2800	3000	2000	59	60	122	ACS800-07LC-3470-5	3xD4 + 5xR8i
4788	5801	3360	4596	3200	3581	2500	60	73	135	ACS800-07LC-4150-5	3xD4 + 6xR8i
$U_n = 600$ V (Ranges 525 - 690 V). The power ratings are valid at nominal voltage 690 V.											
583	872	560	560	500	436	400	55	12	32	ACS800-07LC-0700-7	1xD3 + 1xR8i
790	1182	710	759	710	591	560	56	17	45	ACS800-07LC-0940-7	1xD3 + 2xR8i
898	1344	900	863	900	672	630	56	19	45	ACS800-07LC-1070-7	1xD3 + 2xR8i
1143	1710	1120	1097	900	855	710	56	22	45	ACS800-07LC-1370-7	1xD4 + 2xR8i
1334	1996	1250	1281	1250	998	900	57	28	58	ACS800-07LC-1590-7	1xD4 + 3xR8i
1697	2538	1600	1629	1600	1269	1250	57	34	58	ACS800-07LC-2030-7	1xD4 + 3xR8i
2239	3350	2240	2150	2000	1675	1600	58	44	90	ACS800-07LC-2680-7	2xD4 + 4xR8i
2785	4166	2800	2673	2500	2083	2000	59	55	103	ACS800-07LC-3330-7	2xD4 + 5xR8i
3324	4974	3200	3191	3200	2487	2500	60	66	116	ACS800-07LC-3970-7	2xD4 + 6xR8i
3878	5802	3750	3723	3600	2901	2800	60	76	148	ACS800-07LC-4630-7	3xD4 + 7xR8i
4432	6630	4480	4255	4200	3315	3200	61	87	161	ACS800-07LC-5300-7	3xD4 + 8xR8i
4986	7460	5000	4787	4800	3730	3600	62	99	174	ACS800-07LC-5960-7	3xD4 + 9xR8i
5540	8288	5600	5319	5300	4144	4200	62	112	187	ACS800-07LC-6620-7	3xD4 + 10xR8i

Frame size	Height	Width	Width	Depth	Weight
	mm	w/o LC unit mm	with LC unit mm		
1xD3 + 1xR8i	2003 ^{1) 2)}	730	1030	644	700
1xD3 + 2xR8i	2003 ^{1) 2)}	930	1230	644	830
1xD4 + 2xR8i	2003 ^{1) 2)}	930	1230	644	870
1xD4 + 3xR8i	2003 ^{1) 2)}	1130	1430	644	1040
2xD4 + 3xR8i	2003 ^{1) 2)}	1530	2130	644	1440
2xD4 + 4xR8i	2003 ^{1) 2)}	1830	2430	644	1660
2xD4 + 5xR8i	2003 ^{1) 2)}	2030	2630	644	1910
2xD4 + 6xR8i	2003 ^{1) 2)}	2230	2830	644	2080
3xD4 + 5xR8i	2003 ^{1) 2)}	2430	3030	644	1910
3xD4 + 6xR8i	2003 ^{1) 2)}	2630	3230	644	2080
3xD4 + 7xR8i	2003 ^{1) 2)}	2930	3530	644	2780
3xD4 + 8xR8i	2003 ^{1) 2)}	3130	3730	644	2950
3xD4 + 9xR8i	2003 ^{1) 2)}	3330	3930	644	3120
3xD4 + 10xR8i	2003 ^{1) 2)}	3630	4230	644	3400

- 1) Total height with marine supports is 2088 mm.
2) Pressure release lids require an additional 400 mm.

These ratings apply at 45 °C degrees ambient temperature.
At higher temperatures (up to 55 °C) the derating is 1% / 1 °C

Nominal Ratings:

$I_{cont,max}$: rated current available continuously without overloadability at 42 °C converter circuit liquid temperature.

I_{max} : maximum output current. Available for 10 seconds at start, otherwise as long as allowed by drive temperature.

Note: max. motor shaft power is 150% P_{hd} .

Overload use:

I_N : continuous base current allowing 110% overload for 1 minute/5 minutes

I_{hd} : continuous base current allowing 150% overload for 1 minute/5 minutes

The current ratings are the same regardless of the supply voltage within one voltage range.

Technical specifications

ACS800-07LC - XXXX - X

Mains connection

Voltage and power range

$$U_{3IN} = 380 \text{ to } 415 \text{ V} \pm 10\%$$

$$U_{5IN} = 380 \text{ to } 500 \text{ V} \pm 10\%$$

$$U_{7IN} = 525 \text{ to } 690 \text{ V} \pm 10\%$$

Frequency 48 to 63 Hz

Power factor $\cos\phi^1 = 0.97$ (fundamental)
 $\cos\phi = 0.93$ to 0.95 (total)

Efficiency

At nominal power >98%

Motor connection

3-Phase output voltage: 0 to $U_{3IN}/U_{5IN}/U_{7IN}$

Frequency control: 0 to ± 300 Hz

Field weakening point: 8 to 300 Hz

Motor control software: ABB's Direct Torque Control (DTC)

Torque control: Torque step rise time:
Open loop <5 ms with nominal torque
Closed loop <5 ms with nominal torque

Non-linearity:
Open loop $\pm 4\%$ with nominal torque
Closed loop $\pm 3\%$ 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

Environmental limits

Ambient temperature

Transport -40...+70 °C
Storage -40...+70 °C
Operation 0...+55 °C, no frost allowed
+45...55 °C at reduced output current
(1% / 1 °C)

Cooling method: Direct liquid-cooling, closed loop
Cooling liquid: +38 °C max customer circuit, fresh water or sea water (optional liquid-cooling unit)
+38...+45 °C at reduced output current 1% / 1 °C
+42 °C max converter circuit, fresh water
+42...+48 °C at reduced output current 1% / 1 °C

Altitude
0...1000 m without derating
1000...4000 m with derating - (1% / 1000 m), 690 V up to 2000 m

Relative humidity 5 to 95%, no condensation allowed

Degree of protection IP42, IP54 (option)

Paint colour RAL 7035

Contamination levels No conductive dust allowed
Storage IEC60721-3-1, Class 1C2 (chemical gases), Class 1S2 (solid particles)

Transportation IEC60721-3-2, Class 2C2 (chemical gases), Class 2S2 (solid particles)

Operation IEC60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles without airinlet filters)

Vibration IEC60068-2-6, 0.7 g, 13.2...100 Hz, 1 mm displacement amplitude 3...13.2 Hz

C = chemically active substances

S = mechanically active substances

Product compliance

CE

Low Voltage Directive 73/23/EEC with amendment 93/68/EEC

Machinery Directive 98/37/EC

EMC Directive 89/336/EEC with amendment 93/68/EEC

Quality assurance system ISO 9001 and Environmental system ISO 14001

EMC according to EN 61800-3 (2004)

Category C3, as standard

Category C2, as option



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